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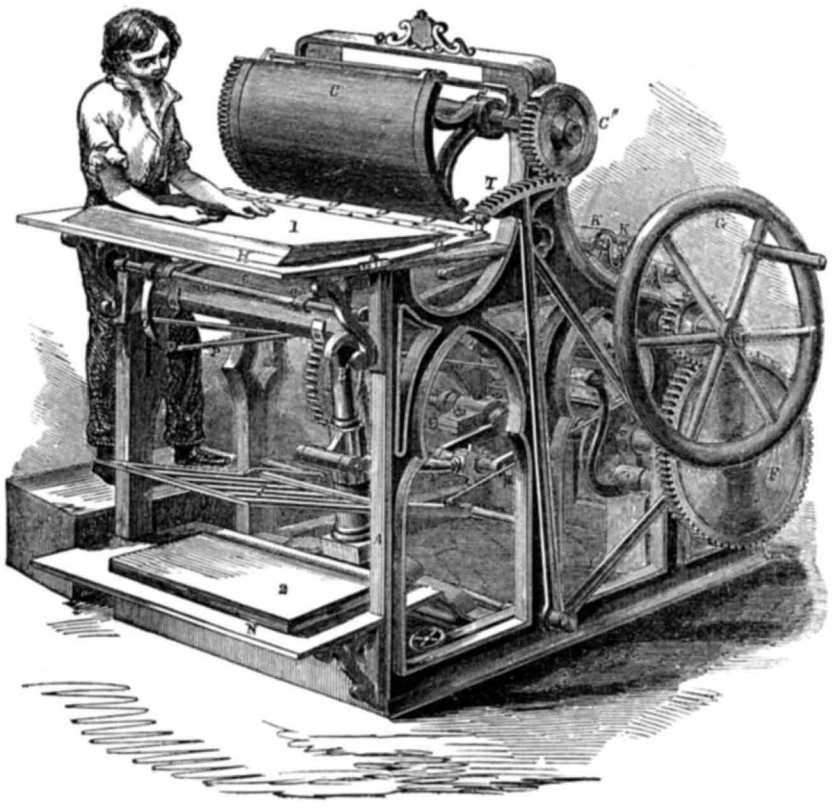
Improved Printing Press.

The first printing presses held the type on a plane horizontal bed, and forced the paper thereupon by the pressure of a flat platen descending vertically like the follower in a cider press. In fact, we think cider presses have been used for printing purposes under some extraordinary circumstances, and such or any of the forms of screw press probably constitutes the slowest practical printing press in existence. The fastest style of press yet constructed, or which can probably ever be imagined, requires that the type be mounted on the surface of a cylinder, so that in short the paper is drawn through between two rapidly revolving rollers, like the iron in a rolling mill. One of the rollers or cylinders carries the type, the other is simply covered with sufficiently soft blankets to enable the type to make a proper impression.

There are several styles of press which involve this principle to some degree, without necessitating the mounting of the type in a cylindrical form. In other words, the blanketed roller is employed for rolling against a plane or flat form of type. The press now to be described is one of that class, and is already in quite extensive use, having been before the public for three or four years. Some improvements have lately been introduced, however, which add still more to its value. It prints with great rapidity and perfection, and is considerably cheaper than other presses of equal capacity in these respects. The form is placed on a bed which, instead of reciprocating or sliding backward and forward horizontally, oscillates or rocks to and fro, while a suitable device above, equivalent in effect to the blanketed roller above mentioned, presses the paper into contact, and prints a sheet at each oscillation.

The inventors are Merwin Davis, of New York City, and Charles Potter, Jr., of Westerly, R. I. Figure 1 is a perspective view of the whole, and figure 2 an outline diagram which serves simply to explain the arrangement and motions of the principal parts. A is the frame of the machine, and B the oscillating bed on which the type form is placed; B′ indicates the stout standard on which B is supported and enabled to rock on a suitable stout shaft below; B″ is a distributing table suitably curved, and attached to the end of B; C is the blanketed cylinder or portion of the cylinder which produces the impression; C′ is the center of motion or rocking shaft, on which this semi-roller is mounted; C″ is a segment fixed on the end of the shaft, C′. The bed, B, rocks on the standard, B, and changes into the position shown by the dotted lines in figure 2. As it effects this movement the semi-roller turns and changes to its dotted position. D is the stout connecting rod by which the motion described is communicated to B from the crank, E; F is a gear wheel on the driving shaft, and G a balance wheel and crank, to facilitate the working of the press by hand power; H is a fixed table or feed board, on which the paper to be printed is placed, and

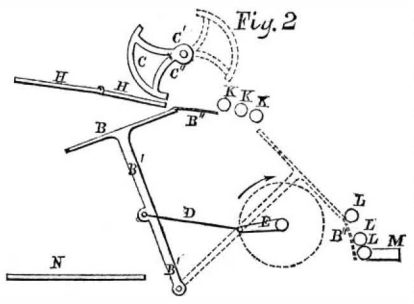
DAVIS AND POTTER'S OSCILLATING PRESS.



H′ is a lifting board hinged to H as represented, and which is, by suitable devices, lifted into contact with C at the proper moment for commencing to feed in a sheet. I is a segment fixed on a lever, J, and worked by a cam on the driving shaft, E, to give the proper motion to C. J is a "fly," by which the paper is removed from the tapes and laid on the receiving bank or fly-board, N.

K K K are inking rollers which are mounted in slots or deep notches in the frame, and urged down by springs, so that they are free to rise and fall to a considerable extent, as the bed moves past under them. L are distributing rollers, by which the ink from the

Fig. 2



the "doctor," M, is properly spread on the distributing table, B″. Both the perspective view, figure 1, and the strong lines in figure 2, represent the press in the position about commencing to receive a sheet. The light rock-shaft, O, mounted under the paper table, H, is worked by a rod extending from the cam on the driving shaft to the hanging arm, O′, and the rocking of this shaft by means of the horizontal arm or arms, O″, lifts the platform, H′, into contact at the proper moment.

Operation.—The platform, H′, rises into contact with C, and suitable grippers on the latter seize the edge of a sheet thus presented. The bed, B, commences to rock forward, and at the same moment, by the aid of the lever, I′, and the segment, C″, the semi-roller, C, commences to revolve. The type on the bed B, and the blankets on the semi-roller, C, are thus brought into contact, and as the surfaces roll together the sheet is rapidly printed and raised off the form, the grippers still holding its forward edge in contact with C. The distributing table, B″, during this movement, passes under and lifts the rollers, K, which subsequently by the onward motion of B, are in effect traversed across the whole face of the form. When the parts have arrived in the position shown by the dotted lines, the distributing table receives an additional coating of ink from the rollers, L, and in returning the form again travels under the rollers, K, which rollers receive in turn a fresh coating of ink from the properly-charged inking table.

To insure the perfect coincidence of the motions of the surfaces on the bed, B, and the periphery of C, there is nicely cut gearing, not represented, on the edges of the semi-roller, C, and corresponding racks on the edges of the bed, B, which lock together just before the operation of printing commences, and continue their union until the sheet has entirely passed. We should observe that while the bed, B, remains in the position shown by the dotted lines, entirely clear of C, and its attachments, the latter is, by the action of the lever, I′, rotated rapidly back to its original position, discharging, in so doing, the printed sheet down upon the fly, J, which lays it on N, so that although the motions of B and C coincide perfectly in one direction, the reverse movement of C is completed before that of B has fairly commenced.

It is evident that the front and rear edges of the bed, B, are further from the axis of motion than the middle, and that consequently the roller or semi-roller, C′, if perfectly cylindrical, and mounted in fixed bearings, could not be made to act on the form as we have described. To overcome this difficulty the surface of the semi-roller, C, although a portion of a perfect cylinder, is not described from the centre of motion, C′, but from a center indicated by a star. The effect of this form, when all the parts are properly proportioned, is to secure a perfectly even contact of the printing surfaces. The bed, B, is furthermore made capable of adjustment by screws at each corner, so that the strength of the impression on all parts of the form may be regulated with the most perfect delicacy. This is an important point in practice.

The first patent on this press is dated July 24, 1855, and the second for additional improvements dated June 2, 1857. The press is constructed with great skill and care in several sizes, and under the immediate supervision of the inventor. The form or bed, B, is easily accessible for correction and the like when in the position shown by the dotted lines.

We consider it the most desirable press for general jobbing purposes with which we are acquainted. It registers very perfectly, no tapes or strings are required either in carrying the sheets or throwing them out, and the impression is under perfect control.

Orders for the presses, or inquiries relating thereto, may be addressed to Chas. Potter, Jr., Westerly, R. I., or at No. 9 Spruce street, New York.

The Raising of Vessels at Sevastopol.

Up to a quite recent date the accounts received through foreign sources of the success of our countryman, Gowan, in raising the vessels of war sunk at Sevastopol are not as favorable as we had hoped. The line-of-battle ships, frigates, and other vessels which were sunk to form three lines at the entrance of the port, it has been found impossible to move. They are deeply imbedded in the sand above the bilge, and are heavily laden with stones and other articles, which were conveyed on board in order to fix them in their places. Seven small steamers which were anchored near the shore in rather shallow water, and were grounded rather than sunk, were the only vessels which had been taken up and repaired at Nicolaieff.

This is the substance of one account. Another, derived from a letter from one of the members of the expedition from Boston, says that the bark *Susan Jane* arrived there in forty-five days from Philadelphia, the quickest passage on record; but they cannot commence on the heavy work—raising the hulls, for some time yet, and are now engaged in taking out guns, and clearing the ships of their chains and anchors, preparatory to lifting them. The letter estimates that the work will be finished certainly in two years.

The importance of removing the ships on account of their obstruction to navigation is less than it would be if the place still retained its former importance. The point to which we believe the Russian government now directs its greatest efforts is Theodosia, or Kaffa, which is to be one of the heads of the line of railway, and is likely to become a great commercial port.

Base Line Measurement.

We briefly noticed last week the recent measurement of a base line in Maine for the coast survey. Professor Bache gave at the Montreal meeting of the Scientific Association an interesting paper on the subject. The line was about five and a half miles in length, and was graded like a common road, at an expense of $4500, in a rapid manner. The operations of measurement required extreme care, and the most uninterrupted attention. Their most successful measurements were at the rate of over a mile a day; and were so accurate that a re-measurement detected no error—that is, the two measures absolutely coincided. We mentioned last week that an error of a fraction of an inch was considered important in such measurements, but do not recollect any previous instance where two measurements of such length as this proved to agree exactly.

Flax Seed and Oil.

There are fifteen mills for grinding and pressing linseed within a range of sixty miles of Dayton, Ohio, and the proprietors met in that city recently to fix the price of the seed. There is a very abundant crop this season, and the price agreed on was from $1·00 to $1·20 per bushel according to the locality. Linseed cakes, the material after the oil has been expressed, are much valued in Great Britain as feed for cattle.

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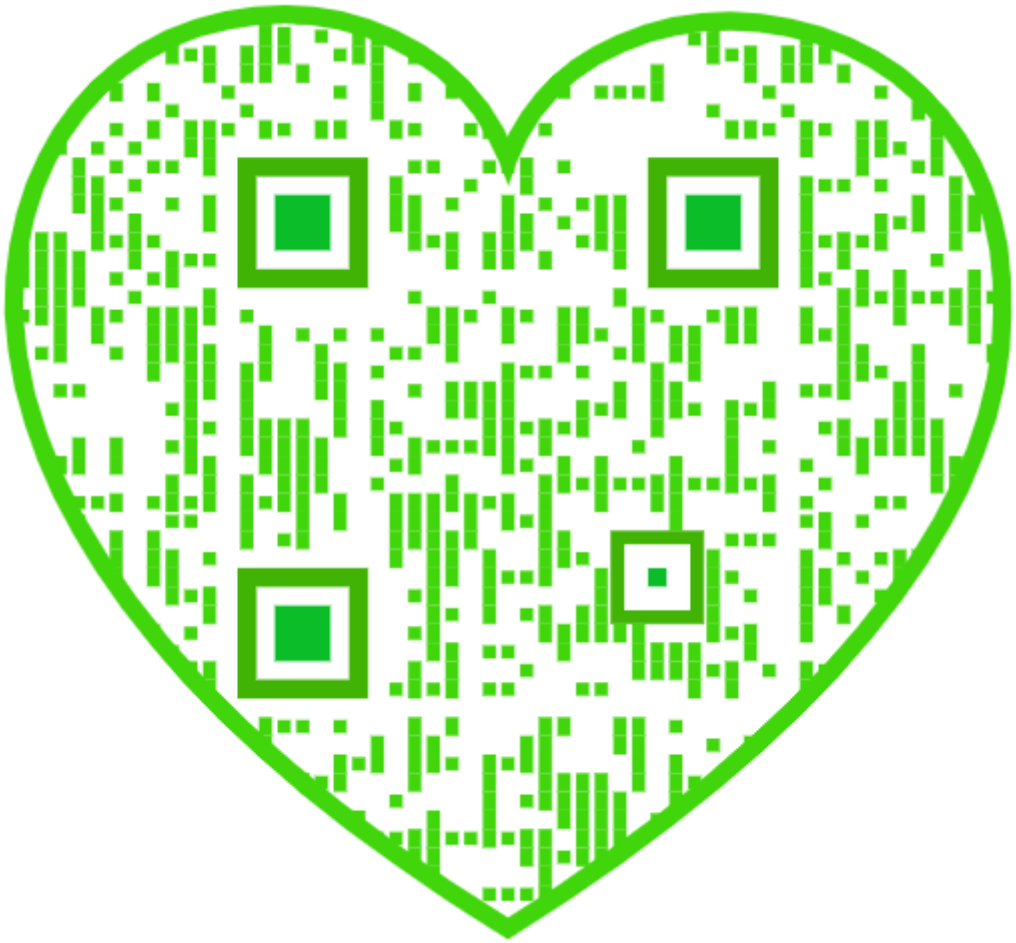

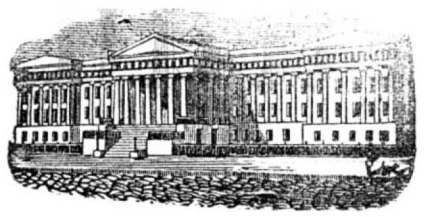

[Reported officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING AUGUST 18, 1857.

TUBULAR SHAFTING—Zachariah Allen, of Providence, R. I.: I claim the improved hollow shafting described, forming a continuous line of mill shaft and pulley or belt drum, substantially as set forth.

ROTARY PLANING CUTTERS—H. H. Baker, of New Market, N. J.: I would not wish to be understood as claiming the use of rotary cutters as used by Daniel, Woodworth, Fay and others

Neither do I claim a rotating disk, as I am aware of its having been previously used.

But I claim the recess, b, in the face of the cutter wheel, substantially for the uses and purposes set forth.

GAS REGULATORS—John H. Cooper, of Philadelphia, Pa.: I do not desire to claim exclusively the employment, in connection with a gas regulator, of a double reservoir, and double rimmed inverted cup.

Neither do I claim, broadly, the employment of an adjustable spring for balancing the pressure on the cup.

But I claim the double rimmed inverted cup, C, with an inclined surface, said cup having a valve, m, and an opening formed by the inner rim h, when the said opening and valve are concentric with the inlet formed by the inner flanges, e, of the casing

RAKING APPARATUS FOR HARVESTERS—Israel Dodenhoff, of Bloomington, Ill.: I claim the rake, H, in combination with the platform, A, and stationary and elastic guides, the whole being constructed and operated substantially as described.

I also claim the gate, I, in combination with a rake, H, traveling in a horizontal endless track, the whole being constructed and operated in the manner substantially as and for the purposes set forth.

GRATE BARS—Edward Dugdale, of Burlington, N. J.: I am aware that turning or swinging grates have been used in stoves, for the purpose of clearing the grates, but these work very imperfectly, chiefly when applied on a larger scale, besides having the inconvenience that coal will always be wedged in between the bearings and the rim of said grates, which prevents them from being closed again

I do not confine myself to the use of chains, as any flexible metal combination, such as metal rope, or linked rods, may be used with the same advantage.

Nor do I confine the application of my invention to locomotive furnaces only, as it may be applied with equal success to the furnace of any steam boiler, or any furnace in general

I am aware that shaking and hinged grates have been used, and that a fire box has been made to raise and lower, so as to change its position in relation to the boiler.

I am also aware that endless chains have been used for conveying coal into a furnace or fire box—I do not claim any of these things.

But I claim the flexible grate bars described, when used in connection with a raising and lowering, or shaking apparatus, so as to change the position of the fire, prevent the baking of the coal, and sift out the ashes, cinders, &c., as set forth.

BENDING METAL PLATES—E. L. Gaylord, of Terrysville, Conn.: I am aware that rollers have been arranged in various ways for rolling metals.

I also am aware that dies of various kinds have been used for drawing and bending metal bars and plates I therefore do not claim separately any of the parts shown and described.

But I claim the combination of the reciprocating bed, B, forming or bending die, M, and rollers, J N, arranged so as to operate conjointly, as shown, for the purpose set forth.

[The principal use of this invention is to bend metals so as to form perfect corners, such as are desired for lock cases and the like, instead of round and imperfect ones The sheet metal is held by both edges, and the angle is produced by rollers operating on an edge of a bed or die on which it rests.]

BENDING METAL PLATES—Julius Perry, of Plymouth Hollow, Conn.: I claim the two rollers, I F, and bed, B, placed in positions relatively with each other, as shown and described, for the purpose specified.

I further claim the rollers, I F, and bed, B, in combination with the die or draw plate, a, arranged as and for the purpose set forth.

[The object of this device is quite similar to that in the patent noticed above, but the end is accomplished by a different arrangement of the parts. These appliances will tend to improve and cheapen the manufacture of locks by substituting neat, strong, and light wrought metal for the cast frames now by preference generally employed.]

COOKING STOVES—Sidney Godley, of Lockport, N. Y.: I claim the arrangement of the stove, A, with the movable adjusting plate, M, which is one of the entire sides of the stove, and detaching it for a cover to the baker, B', when the same is used with stove A the whole when arranged forming a complete cook and baker, as set forth.

Second, The adjustable extension chamber, B, to be attached to stove A, when it is desired to extend its cooking and heating capacity—the stove, A, being a complete stove, with or without the attachment as set forth.

HOOPS FOR LADIES' SKIRTS—Charles S. Goodman, of Washington, D. C.: I claim constructing the hoop of spools or tubes strung upon an elastic cord, or its equivalent, to give elasticity to the hoop, with the ends of the spools cut on a line radiating to the center of the hoop, whether the same be made of wood or any other substance to produce the same effect, the whole being arranged substantially in the manner and for the purposes specified.

METAL BUTTONS—Jared O. M. Ingersoll, of Ithaca, N. Y.: I claim the manner of securing the points to and through the button, by passing said points, when bent, through openings in the collet of such buttons, and fastening said points and collet securely in place by pressure, substantially in the manner and for the purpose set forth.

EYE-SHADING APPARATUS—Francis H. Jones, of Federalsburg, Md.: I am aware of the use of tubes in picture galleries, and also of the employment of shades above the eyes; such, therefore, I disclaim.

I claim the arrangement in the top of the tube of the ventilator, e and light graduating contrivance, c d, when the tube is designed for use as stated.

PERCUSSION POWDER—Magnus Kling, of Reading, Pa.: I claim the combination of antimony with chlorate of potassa, oxalic acid and glue, mixed in the named proportions, for a composition for the manufacture of percussion caps for fire-arms.

DRESSING SAWS—Philo Maltby, of Dayton, Ohio: I claim the described devices, or their equivalents, for clamping and holding the plate of the saw, in combination with the devices or their equivalents, for holding, operating, and feeding the tool to plane the teeth of the saw, substantially as described.

And in combination therewith I claim the described apparatus, or its equivalents, for operating and feeding the drill by power or motion derived or communicated from the planing apparatus, so as to drill the holes in the plate at the same time the teeth are planed.

R. R. CAR BRAKE—Jas. Mitchell, of Osceola, Iowa: I do not claim the use of movable shoes as stated

Neither do I claim, broadly, the actuating of the braking apparatus by the removal of a detent.

But I claim the combination of the lever detent, f, hooked rod, h, adjustable collar, l, standard, p, rod, o, slotted table, q, and bent lever, s, when said parts are arranged for joint operation with each other and with the shoe-suspending apparatus, substantially as set forth.

INHALING APPARATUS—J. C. Schooley, of Cincinnati, O.: I am aware that inhalators have heretofore been made and used, with ingress and openings, also a tube through which to inhale.

I also am aware that inhalators have been heretofore used, from which to inhale gas, vapor, &c., but in no case have I ever known them to contain ice or its equivalent over which air was passed and then inhaled.

I disclaim the use of the ingress and egress openings separately from the ice receptacle. I also disclaim the use of an inhalator for the purpose of inhaling from it any kind of gas or vapor.

But I claim so combining the ice receptacle, A, with the openings, b and c, and so arranged that the outside atmosphere after being cooled and dried by passing over ice or its equivalent within said receptacle can be inhaled into the lungs, in the manner and for the purposes substantially as set forth.

ARTIFICIAL HANDS—William Selpho, of New York City: I am aware that the fingers of artificial hands have been opened by a motion derived from pressure of the arm or stump against the person, and also that the hand has been closed by a spring; therefore I do not claim the same.

But I claim constructing the skeleton fingers on the metallic cross pipe, g, set in eyes in the line of the knuckle of the hand, and provided with the contractible spring acting on one side of said pipe to close the hand substantially as specified.

Second, I claim opening the artificial hand on one arm by a motion derived from the shoulder of the other arm of the wearer, said motion acting through the shoulder loop, l, strap m, and cord, K, or their equivalents substantially as specified.

TELEGRAPHIC REPEATERS—J. E. Smith, of Troy, N. Y.: I do not claim the opening and closing of the local circuit by magnetism produced by the opening and closing of the main circuit.

But I claim the connection of a battery at each station with the line wire, and with two local cross connections in such manner that by means of the key and relay lever the cross connection through the register magnet and the other cross connections are alternately broken, and the battery thrown upon the main line, and its current caused to operate the relays on the line wire, like a main current till shut from the line by the relay lever as described, whereby each battery is made to perform the duty of an ordinary local battery while not wanted on the line wire, and to perform the duty of a main battery while not wanted as a local

Second, The key placed in the local circuit and constructed as described to open and close the said circuit in two branches to give two directions to the current over the line wire, substantially as and for the purpose set forth.

[This ingenious modification of telegraphic apparatus dispenses with the use of a main battery continually on the line, and overcomes much of the difficulty arising from the escape of current to the ground where large batteries are in constant connection with the line wire.]

RAILROAD RAIL—Edw. W. Stephens and Richard Jenkins, of Covington, Ky.: We are aware that it has been proposed to construct railway rails by bending the sides of a U rail, in such manner as to nearly or quite meet at the base as in the English patent of T. A. Kinder, No. 273, 1853, and do not wish to be understood as claiming any devices where the sides remain unwelded, an essential feature of our invention being the formation of an entire and complete T rail web.

We claim the tubular T railroad rail, constructed in form and manner substantially as herein set forth; that is to say, having the two portions of its web welded together at the neck, and branching to the outer and inner edges respectively of the tread or track of the rail.

BAKERS FOR COOKING STOVES—P. P. Stewart, of Troy, N. Y.: I claim the employment of the plate or pan with its legs to rest on a stove plate, its projecting wires at the angles to guide the reflector and its aperture or slot in the middle of the length, in combination with the tin reflector enclosing the whole and leaving a space all around, which, together with the slot in the middle of the plate or pan, will permit the heat radiated from the stove plate to be reflected on to the top of the articles to be baked or roasted, all substantially as specified.

SHEARS FOR CUTTING METAL—T. F. Taft, of Worcester, Mass.: I claim the rolling lever upon an incline plane which is upon the side or blade holder, substantially as specified.

HOT AIR REGISTERS—J. V. Tibbets, of New York City: I wish to be understood as not claiming a register with a valve for turning the heat, as such has been before essayed.

But I claim the valves c d placed in the ascending pipe at or near the center with independent movements as and for the purposes set forth.

TWISTING CURB CHAINS—Lauriston Towne, of Providence, R. I.: I claim the combination of the vibrating spiral die, N, and stationary holding die plates, m m, or their equivalents, arranged and operating substantially in the manner and for the purpose specified.

PORTABLE HORSE POWERS—Danl. Woodbury, of Rochester, N. Y.: I claim poising the frame of said horse power upon a pair of journals or spindles which are received into the hubs of suitable transporting wheels, when the said frame is combined with the jointed bars, K K, and the jointed frame, J J, substantially in the manner and for the purpose set forth.

TANNING LIQUIDS—Leo de La Peyrouse, of Paris, France, assignor to Michael J. A. Guiet, of New York City: I claim combining with the tanning solutions or liquor the chloride of tin or its equivalent, substantially in the manner and for the purposes set forth, in which the skins are handled as made known.

SELF-ACTING MULES FOR SPINNING—Geo. Wright, of Grafton, Mass.: I claim giving a second draft to the yarn after the delivery of the ends has ceased, for the purpose and in the manner substantially as set forth.

Second, I claim operating certain motions upon the carriage, such as braking up the spindles, backing off the yarns, and operating the upper faller by the taking-in scroll chain as set forth

Third, I claim running the drum band over a vibrating arm upon the carriage, and clamping it thereto at intervals for the purpose of backing off and winding up the yarn as set forth.

Fourth, I claim hanging the stop which holds the carriage stationary while the second twist is put in to a spring, so that it may yield in the manner described to prevent injury or breakage of the yarn as set forth.

Fifth, I claim varying the obtuseness of the cone upon different portions of the cop by means of the block, F, operating in the manner substantially as set forth.

RE-ISSUE.

REED MUSICAL INSTRUMENTS—Jeremiah Carhart, of New York City Patented Dec. 28, 1846, re-issued June 24, 1856: I claim so connecting the board which contains the reed seats or perforations for the reeds with the exhausting bellows, that it shall form substantially a part of the stationary leaf or cover of the exhaust chamber thereof, while the exhausting or pumping chamber is placed in immediate connection with the said exhaust chamber without the intervention of tubes, thus improving the tone of the reeds, expediting their speaking, and giving a compact, light, convenient and graceful form to the instrument substantially as described.

I also claim the reed cells, in combination with the reed seats or openings substantially as described.

I also claim the concentrating chamber in combination with the reed cells and read seats, substantially as described.

I claim the last two combinations specified only wern they are to be used with a suction or exhaust bellows, capable of producing a continuous current of air through the reed opening as set forth.

Note.—The above short list of claims indicates the state of the Patent Office at the present time. The wheels of all government departments move slow at this season of the year, many of the officers and clerks being absent from their posts. There is no lack of business to be done at the Patent Office, but the building is undergoing repairs—painting and cleaning. Several of the examiners are absent, and until cool weather returns, inventors who have applications pending must have patience, consoling themselves that their business will be better attended to on an autumn morning than it would likely be during the dog-days, which is an unpropitious season for doing business at any government office. It is a good time to have cases prepared and deposited in the Patent Office, and all who have inventions matured are advised to avail themselves of this opportunity to get their cases ready.—ED.

Sand Bars and Dredging.

MESSRS. EDITORS.—I am informed by a very intelligent scientific gentleman connected with the United States Revenue Service, that the sand which composes the whole Texas coast is so near the weight of the sea water that it will not sink below the depth of twenty-four feet from the surface, consequently no sand is found below that depth on this coast. It is inferred from this fact that when the inner harbors are more than twenty-four feet in depth, like that of Galveston and St. Joseph or Aransas, if the bars were excavated below that depth, they would never be liable to fill up, as this peculiar kind of sand is the heaviest material brought down by our rivers or thrown up by the Gulf sea.

The fact that the Pensacola Pass has never been liable to fill up where this same kind of sand prevails seems to strengthen this inference. The subject is of so much importance to all harbors similarly situated, that I think you would be doing a great public service by calling public attention to it through your widely circulated paper.

From my own personal knowledge, I am confident that with a dredging machine that would work in a sea way, which would not cost over $50,000, the bar at Aransas could be excavated to the depth of thirty feet (which is the water inside) in less time than three months, at an expense not exceeding $10,000. With the same machine, numerous other harbors on the Gulf could be permanently improved in a similar manner, which would be of incalculable value to the great country of the Gulf coast. D. S. H.

Corpus Christi, Texas, August 1, 1857.

[We are not prepared to offer an opinion whether any particular sand is found below twenty-four feet from the surface of the sea, but if it is not it cannot be for lack of specific gravity. Particles which will sink below the surface will continue to sink to any depth required, as water is very little denser even at a depth of a mile than at the surface. It has been demonstrated that solids are never supported at any levels below the surface of the ocean. It is a popular fallacy—or rather one which is rapidly becoming unpopular—that sunken vessels descend to a certain depth and then stop without reaching the bottom. There are two reasons why this result cannot obtain. First the wood is elastic and under great pressure would actually be condensed faster than the water, and second, wood is porous and allows the water to be forced into it. Even cork, one of the most buoyant substances known, becomes so much compressed at a great depth, that if detached from a sounding lead under such circumstances, it will continue to sink instead of rising.

The action of currents and waves takes the deposits of rivers and the wash of coasts to certain localities more than to others, and the localities where such earthy matter is deposited soon fills up to above that level. Sand is most troublesome in those localities, (and they are in the aggregate very extensive,) where the material is by one great class of agencies induced quietly to deposit itself, and by waves and occasional great storms is frequently agitated and changed. This is the case we presume on the Texan coast, and we think it probable that our correspondent has got a wrong impression respecting the views of the scientific gentleman referred to.

The laws which control the formation of bars at the mouths of rivers have been much studied, and although as yet but imperfectly understood in all their bearings, and made to apply uniformly in all cases, it is easy to see that there is a very sufficient cause for their formation. Much earth is held mechanically suspended in the water of a river in consequence of the agitation due to its flow over and around obstacles, but when the water loses its velocity in the ocean, the mud settles and raises the level of the bottom. The Mississippi discharges about 21,000,000,000,000 cubic feet of water per annum, and according to Prof. Riddell, of New Orleans, about one part in 3,000 is solid matter. This would be equal to 220 cubic feet of earth per second, or sufficient per annum to raise the surface of one square mile 300 feet high.

Judge Mason to the Scientific American Patent Agency.

MESSRS. MUNN & Co—I take pleasure in stating that while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE came through your hands. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill, and fidelity to the interests of your employers.

Yours, very truly,

August 14, 1857. CHAS. MASON.

[The above complimentary letter from ex-Commissioner Mason needs no comment, although an inclination prompts us to add a remark or two for the benefit of inventors who may have recently become subscribers to the SCIENTIFIC AMERICAN.

Judge Mason, in the above terse but expressive note, simply endorses what is set forth in substance in our circulars, and what most inventors throughout the country very well know; but the tribute is so flattering to us as successful solicitors for patents, that we make room for it, trusting it may act as a guide to such inventors as may be in pursuit of competent parties to whom to submit their business. Perhaps the assertion would have been nearer correct had Mr. Mason stated that not less than ONE-THIRD of the entire business of the Patent Office was derived from the SCIENTIFIC AMERICAN AGENCY; but that is a point of no consequence to those desiring to apply for patents, compared with the latter part of his letter, where he refers to the "marked degree of *promptness skill* and *fidelity*" which we ever manifest towards those for whom we act as attornies. In addition to the above, we will simply add that we shall not abate our energies, in the future, to act faithfully and deal justly with all who may seek our counsels or employ us to do their business at the Patent Office.

Our facilities for taking patents in all European countries are unequaled, and we are not far from right in asserting that seven-eighths of all American inventions patented abroad are secured through our office. Circulars of information concerning the proper course to be pursued in taking out patents in this or in foreign countries, may be had gratis by applying to our office. In ordering circulars, state for what countries information is wanted, and a circular giving all necessary particulars will be sent free of postage by return of mail.

Complimentary to the Scientific American.

The following extract is taken from a business letter coming from one of the oldest subscribers to the SCIENTIFIC AMERICAN in the South. We highly prize such tokens of good will:—

"In justice to you, I state with pleasure that the information I have received in the reading of your journal for the past ten years I would not have blotted from my memory for five thousand dollars. In fact, it is a mystery how any man of thought and reflection will, for the paltry sum of two dollars a year, be deprived of this great source of useful knowledge. C. H.

Chester, S. C., August, 1857.

That Red Ink Notice.

All of the mail subscribers to the SCIENTIFIC AMERICAN who have received our new prospectus with the words "take notice that your subscription expires with No. 52, present volume," printed in red ink on the top, are reminded that only one number after the present will complete the volume. Such subscribers should lose no time in remitting their two dollars, if they wish their names continued on our subscription book.

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The Laboratory—Chemical Analysis.

To those unacquainted with chemical science few things appear more extraordinary than the analytical art. In the laboratory, two kinds of analysis are recognized, termed proximate analysis and ultimate analysis. Proximate analysis is comparatively easy; hence the results obtained by it are generally paraded in the public prints. Ultimate analysis is, however, more recondite, and requires a good knowledge of mathematics; but it leads to the most wonderful discoveries. Proximate analysis divides the substances under examination into their natural parts. Thus, suppose beer is to be analysed—we consider proximate analysis perfect if we can separate the water, the spirit, the salt, the saccharize or sugar that it contains, specifying the quantity of each. Again, when we are to determine the composition of a mineral given to us, if, by a proximate analysis we find it soda, clay, iron, lime, and carbonic acid, we conclude that these substances indicate the mineral's composition. Ultimate analysis, however, goes still further; for by it we ascertain the composition of spirit, sugar, lime, water, salt, carbonic acid, &c. If by an ultimate analysis we divide a material into two or three parts, and these parts are no longer capable of division, or rather of being separated into other parts, then we have arrived at its ultimate composition—that is, it is divided into its absolute elements. The names of the elements not being so familiar to the general reader as those of the natural compounds, the ultimate analysis of a substance possesses little interest out of the laboratory. Not so, however, with a proximate analysis, for the interest which the public take in this is shown by the applause which has been given to the chemist who has exhibited starch in mustard, bole-ammoniac in anchovy sauce, chicory in ground coffee, and other little sophistications.

To be able to execute an ultimate analysis, and thence to deduce by calculation and analogy some fundamental principle relating to the substance so analysed, requires a genius which only now and then sparkles among men, such as Davy, Liebig, Faraday, and Graham. The proximate analyzers are geniuses of the second order in chemical fame; such men are Hassall, Bastick, Muspratt, and Piesse. Before a person can attempt to perform a proximate analysis, he must be thoroughly versed in the nature, qualities and properties of almost every substance that can be laid before him. This, of course, requires great study, years of experience in the laboratory, and a quick adaptation of the mind to see by analogy, from its mechanical form, to what chemical agents to subject the substance under analysis. We, therefore, are unable, in a short article like this, to teach the reader to become an analytical chemist; nevertheless, we can perhaps give him an idea of the process. Suppose a substance to be given for analysis; it is first examined as to the class of creation to which it belongs. Is it mineral, animal, or vegetable? The question being decided that it is mineral, the first process would be to subject it to water. After being well mixed with that fluid, we should notice its loss of weight, if any; next, we would place it in hydrochloric acid, and again notice loss of weight; then (if there be sufficient reason by its metallic appearance) into nitric acid; then into strong ammonia; then it would be fused with an alkali, and again subjected to weak acid. Now we should begin to examine the various fluids by means of these materials which in the laboratory are called "tests." All these tests are used with a previous knowledge of their action; thus, oxalate of ammonia indicates "lime;" nitrate of baryta indicates "sulphuric acid;" sulphuretted hydrogen shows a "metal" (this has to be again examined to learn *what* metal); pure ammonia tells of "phosphoric acid;" and so each base and acid has to be searched for until the analysis is complete, and the weight of each matter calculated to the proportion of the entire mineral. An ordinary kind of analysis, such as to ascertain the presence of lead in water, or arsenic in flour, is much more simple, there being only one substance sought for; we have therefore only to find an infallible test for the material to pronounce judgment as to its presence. Analytical chemists are therefore chemical police, who warn the public against adulterations, careless dispensers, and poisoners.

Utilization of Offal.

There is, according to the New York *Sun* a systematic method adopted in Paris and some other European cities for disposing of dead animals profitably by feeding them to rats. There are, it would appear, large *ratteries* conducted by men who do little else than keep on the alert for dead and dying animals. They become such ready judges of the brute creation that they frequently bar gain with, and pay beforehand, the owner of an animal likely to die, for his carcass. When obtained, the dead animals are conveyed to a large enclosure swarming with millions of rats. Being left there at night, the next morning nothing but bones remain, picked as clean and white as could be accomplished by any other method. The bones are then ready for any of the thousand means of turning them to useful purposes.

When the rats increase beyond all necessary requirements, as they naturally do, an ingenious method is adopted of lessening their numbers. All around the walls of the enclosure, near the ground, are made immense numbers of false holes, which penetrate about eight inches in depth. At night, when the rats are all out, a *charivari* is got up with tin pans, kettles, gongs, and other appliances, which speedily frighten them to their holes. They rush for safety to the walls, the real holes become choked up with numbers, and the rats plunge into the false ones, from whence they are afterwards picked out by their tails and thrown into a basket. Their skins are sold to be made into gloves, their carcasses are consumed by their brethren, and the bones are turned to other useful accounts. This is another of those astounding wonders which so often appear in American journals as emanating abroad.

Bones.

There is a bone-boiling establishment opposite Yonkers, on the Hudson river, which pays for bones in this city alone an average of $100 a day. The fore leg and hoof are usually bought by manufacturers of glue, and when they are done with, they are sold to the bone-dealers at two cents a pound. The hoofs of horned cattle are disposed of at the rate of $40 a tun, and are afterward made into horn buttons and Prussian blue. Horse hoofs and sheep hoofs and horns are sold for $15 a tun. On the arrival of the bones at the factory, the thigh and jaw bones are sawed so as to admit of the removal of the marrow. They are then thown into a vast cauldron and boiled until all the marrow and fatty substances attached to them are thoroughly extracted. The fat is then skimmed off and placed in coolers, and the bones are deposited in heaps for assortment. The thigh bones are placed in one heap for the turners; the jaws and other bones suitable for buttons are placed in a second pile; the bones suitable for "bone black" come No. 3, and the remainder are ground up for phosphates and manures.

"Bone black" for sugar refiners is worth from 2 1-2 to 3 1-2 cents a pound. There are eleven large sugar refineries in this city. Stuarts' alone pays about $40,000 a year for "bone black."

Formation of Coal.

Professor J. W. Dawson, at the late Montreal meeting, read a paper in which he argues that the largest beds of coal in Eastern America consist mainly of the flattened bark of trees, the wood of which has perished, or appears only in the form of fragments and films. He did not insist on this view, although he had specimens which showed the mass of the trees reduced to a very thin sheet, while the bark remained of a large, perhaps nearly of its original size. He suggested that of the curious fossils known as "Sternbergiæ," those which occur only with smooth coatings of coal might have been analogous to rushes in their structure, while those which had fragments of fossil wood attached were of a different character. Prof. D. has compared his specimens with living plants, and found one—the *Cecropia Peltata*—in which the medullary cylinder is lined throughout with a coating of dense whitish pith tissue, forming a sort of internal bark. Within this the stem is hollow, but crossed with arched partitions of a tissue like the coating. Of this character must have been many species of the "Sternbergiæ."

Lead.

When this metal was first used by man no one can tell. It is known to have been in common use among the Romans, who sheathed the bottoms of their ships with it. At that time lead was twenty-four times the price it is now. The uses of lead are very numerous, such as for covering buildings, for water pipes, for dyeing and calico printing, in making glass, for glazing porcelain, for refining gold and silver, for pigments. White lead, red lead, and yellow chrome, are known to everybody. The application of lead as a cosmetic is somewhat curious. The Roman ladies were wont to "paint" with ceruse (oxyd of lead). Plautus, an old poet, introduces a waiting-woman refusing to give her mistress either ceruse or rouge, because, in the true spirit of a flatterer, she thought her quite handsome enough without it. The best hair-dyes are made with lead. The quantity of sheet lead used for wrapping tea, tobacco, and perfumery goods, is enormous. It is remarkable that this metal, when dissolved in an acid, has the property of imparting a saccharine taste to the fluid. Thus the common acetate of lead is always called "sugar of lead." It was, perhaps, on this account that the Greeks and Romans used sheet lead to neutralize the acidity of bad wine—a practice which now is happily not in use, since it has been found that all combinations of lead are decidedly poisonous. Lead will take off the rancidity of oil, and on this account it is much valued by watchmakers for making their lubricating oil. The alloys of lead, which we call pewter, solder, and others, are so essential in every-day life that we should be in a regular "fix" without them. "As heavy as lead" is a proverb which brings to our minds its weighty quality, which is of great importance, for it enables us to ascertain the depths of the ocean; and without we could do this, how could we lay down the telegraph cables? how ascertain the presence of those dangerous banks which upset the vehicles of the mighty deep? Thus we perceive that one material is subservient to another, till that great unity is produced which we call the world. SEPTIMUS PIESSE.

The American Camels.

The camels first imported, are, it is reported, employed with tolerable success in transporting supplies between St. Antonio and Camp Verdo, Texas. Three little ones were born in March, and five or six more births are expected. The principal remaining point is the character of the stock that may be produced. The officers in charge are, however, sanguine that it will fully equal that of the parent stock, and may, by proper attention, be more highly developed.

Diamond.

An item is going the rounds to the effect that one of the workmen engaged in boring an artesian well in Stryker, a village on the Air Line Railroad, about ninety miles from Toledo, O., found a pure diamond last week, at a depth of about one hundred feet. The diamond is represented to be of the size of an ordinary marble.

French Silk Manufacture.

The production of cocoons in France has diminished from about 58,500,000 pounds in 1853, to about 16,750,000 in 1856. The aggregate production of silk in the world is estimated at a value of nearly $200,000,000.

A piece of candle may be made to burn all night in a sick room, or elsewhere, when a dull light is wished, by putting finely powdered salt on the candle until it reaches the black part of the wick. In this way a mild and steady light may be kept through the night from a small piece of candle.

Economization of Earth Work in Cities.

The digging of a pit at the point where a branch pipe, either for water or gas, is to be connected to a main in the streets of a city, cannot be avoided, but the serious annoyance due to tearing up the sidewalk and area in front of a building, to lay down the small branch leading thereto, may, in some cases, be got over by "tunneling" with a common auger. The Hartford *Times* suggests that augers be made for the especial purpose, and instances a recent case in that city, where an operation was effected with complete success, and at a cost very trifling compared with the old mode, by simply attaching an iron rod fifteen feet long, as an extension to the shank of a common 3-inch screw auger.

Too Large Estimates.

The editor of an exchange journal is severe on a class of inventors who exhibit a money grasping spirit altogether too reckless to suit his ideas of propriety. He instances a new patent earth pulverizer which, according to the inventor, can be built for $150, and for which the asking price is $600, and premising that as this inventor says no farmer without it can compete with those who use it, very pertinently inquires if it is generous to hold it quite so high? Supposing one million, or about one in five, of the farmers in this country should pay his clean profit of $400, what would one man do with so much money?

Patent Extensions for 1856.

We publish herewith a list of such patents as were extended during the year 1856, for a term of seven years. Extended cases are not published, except in the Annual Reports:—

Spark Arresters.—William C. Grimes, Philadelphia, Pa.

Machines for Threshing and Winnowing Grain—Andrew Ralston, West Middletown, Pa.

Reaping Machines—Jonathan Read, Alton, Ill.

Constructing Presses for Pressing Hay, Cotton, &c—S. W. Bullock, New York City.

Heating Stoves.—Zephaniah Bosworth, Harmar, O.

Water Wheels.—Lemuel W. and George W Blake, Pepperell, Mass.

Constructing Shielded Pins for Securing Shawls, Diapers, &c.—Thomas Woodward, New York City.

Machines for Ruling Paper.—George L. Wright, West Springfield, Mass.

Constructing Brushes for Dressing Warps.—Samuel Taylor, Cambridge, Mass.

Felting for Coats, Hats, &c.—Marmaduke Osborne, New York City.

Grinding and Polishing Metallic Surfaces, particularly Saw Plates.—Richard M. Hoe, New York City.

Lamps for Essential Oils, &c.—Michael B. Dyott, Philadelphia, Pa.

Water Wheels—Reuben Rich, Salmon River Post-Office, N. Y.

Machine for Cutting Shoe Pegs.—Stephen K. Baldwin, Gilford, N. H.

Machine for Sweeping and Cleaning Streets.—Joseph Whitworth, Manchester, England.

Machine for Cutting the Threads of Wood Screws.—Cullen Whipple, Providence, R. I.

Power Printing Press.—Isaac Adams, Boston, Mass.

Power Printing Press.—Isaac Adams, Boston, Mass.

Constructing Locomotive Engines.—Matthias W. Baldwin, Philadelphia, Pa.

Construction of Brick Presses.—Alfred Hall, Perth Amboy, N. J.

Window-Blind Hinges and Fastenings.—William Baker, Utica, N. Y.

Printing Presses.—Jeptha A. Wilkinson, Fire Place, N. Y.

Steering Apparatus for Vessels.—George W. and E. B. Robinson, Boston, Mass.

Pump and Fire Engines.—Benjamin T. Babbitt, Shuler C. Higbee, and Peter W. Plantz, Little Falls, N. Y.

Door Locks.—John P. Sherwood, Fort Edward, N. Y.

As we have not sufficient room for the publication of the claims, we will furnish a copy of any one of them for the usual fee of one dollar.

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New Inventions.

American Marks in Birmingham.

An American ax company has instituted proceedings against thirty-six merchants and manufacturers for using their mark on the axes and other edged tools sold in England. The parties proceeded against do not deny the existence of the practice for the last fourteen years, and plead its notoriety for so long a period as a justification.

Vibration near Mill Dams.

A paper, by Professor Snell, of Amherst. read at the recent Montreal meeting, was upon the vibration of waterfalls. Acknowledging the reality of vibration produced by friction on the edge of the dam, he proved that it was sometimes produced by the vibration of air behind the fall. It is important, of course, to know the cause of this evil, which sometimes becomes so serious in the neighborhood of mill dams as to keep windows and doors continually rattling. We have known it to be cured in some instances by constructing an inclined platform to deflect the water down the stream as it struck the base of the fall.

Improved Water Wheel.

The water wheel represented in the accompanying figures combines to a considerable degree the peculiarities both of the Jonval and the Fourneyron turbines. The water is fed into a case around and over the wheel, and is caused to impinge against the buckets, in a manner analogous to the former, while it is discharged from the periphery of the wheel at a lower level, through buckets which are curved in a manner similar to those of the latter much approved wheel. The effect attained or striven for, in this as in all turbines, is to receive the water at a tolerable velocity, approximating that at which it would escape freely under the given head, and to finally discharge it from the wheel with no considerable motion in any direction.

A is the shaft, and B a suitable step therefor. C is the side, and C′ the floor of the penstock. C″ is the lateral passage through which the water is admitted. D D are guide plates arranged around the periphery of the upper portion of the wheel, and between which the water is led in its passage to the buckets. E is the cover, a fixed casting which is supported on the guide plates, D D, and which relieves the wheel from any pressure of the water above. F F represent simple supports of the penstock, and may be made of any ordinary material, and in any form most convenient. G is the main body of the wheel, cast in one piece. G′ is a ring at the half hight of the wheel. It is fixed to and forms a part of the wheel, and revolves with it. H H are radial buckets, and I I are Fourneyron buckets—those which are curved backwards, and through which the water is finally discharged. J is a cast iron ring which fits tightly yet easily to the series of of guide plates, D, as also to the cover, E. It is free to be raised or lowered by the rods, K K, the upper extremities of which rods are connected by pinions and a shaft as represented to the hand wheel, L, or to any other suitable device for hoisting and lowering to regulate the speed. When the ring, J, is lowered quite down, its edge makes a tight fit on the upper surface of C′, but on being raised it allows the water to flow inward among the guide plates, D, in quantities proportional to the extent to which it is elevated. It is represented in the figure as hoisted to its full extent, and also as partially broken away, the better to show the other parts.

The water is received in the penstock, C′ with or without a slight rotary motion therein, depending on the manner in which C″ is connected. It is advisable to so connect the passage, C″, that the water shall rotate in C in the same direction as the wheel revolves. In this reservoir its surface stands at nearly the same level as in the mill pond from which it is received, and the water presses with its full hydrostatic force on the various parts of the interior. When, by turning the hand wheel, L, the gate J is raised, the water flows through the spaces between D D, and strikes in a tangential direction on the radial buckets H, thereby giving motion to the wheel. The water descends in the curved space represented in fig. 2 to the part below the central ring, G′, and escapes from the edge of the radial buckets, H, only by rushing out through the curved buckets, I, thus aiding still further in urging forward the revolution of the wheel.

BALDWIN'S TURBINE WATER WHEEL.

Fig. 1

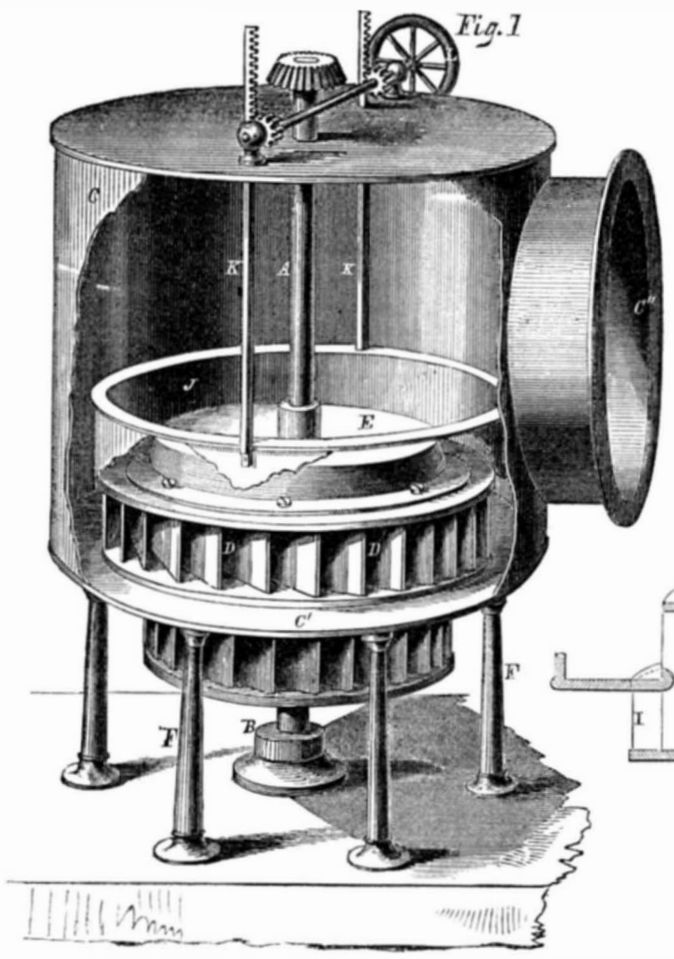
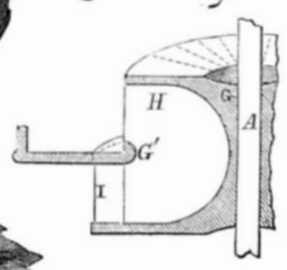


Fig. 2



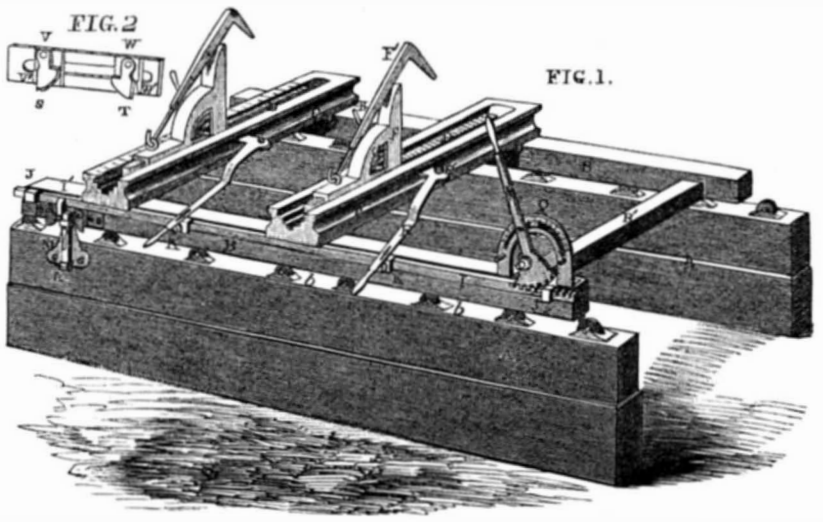
It is thus discharged in lines so nearly tangential to the periphery, and at a relative speed so nearly equal to the actual motion of the latter, that its momentum is very trifling.

This wheel was patented on the 25th of November, 1856. For further information, address the inventor and patentee, Stephen K. Baldwin, Guilford, N. H.

WELLS' AUTOMATIC SAW MILL BLOCKS.

FIG. 2

FIG. 1.



The ordinary head and tail blocks mounted on the carriages of saw mills are adjustable by hand, and their operation requires two men, or if only one is employed, he must travel at each setting of the log, from one end to the other of the carriage, and adjust each end separately. There are automatic head blocks, however, several of which we have at different times illustrated, in which the operation of setting the log is performed with mathematical precision, without any aid of the attendant. In the invention now to be described, the advantages of quite perfect mechanism are secured without sacrificing the convenience afforded by the ordinary method of adjustment by hand. The latter is especially desirable in sawing tapering joist, or the like. The form of head block here represented is designed for circular saw mills, but the same principle may be applied to those with reciprocating saws.

Fig. 1 is a perspective view of the whole, and fig. 2 a diagram of a small portion which is peculiarly important, and represented but obscurely in Fig. 1. A is the stationary frame or support, B B are the longitudinal timbers, and B′ the cross timbers of the carriage, which is by the ordinary means induced to travel backward and forward on ways, or on friction wheels, *b b*. The engraving represents both blocks, which are precisely alike, and represented by C C. D is a rack which is fitted to slide longitudinally in a suitable dove-tail groove on the upper surface of C. It is connected to the bent lever E, which latter is hinged to C at the angle E′, so that any angular motion imparted to E moves the rack D backward or forward transversely in the carriage. F is a knee-shaped casting also supported in the groove in the top of G. It is free to slide backward and forward in C, except for the action of three or more pawls, G, which are so mounted as to take in the teeth of the rack, D. F′ is a dog which aids in holding the log firmly in contact with F, and H is a lever by which the pawls, G, may be all lifted out of contact with D at pleasure. The lever, E, may be grasped by the handle represented at the nearest extremity, and it follows that any movement given to this lever imparts a longitudinal reciprocating movement to D, which in its turn, through the aid of the pawls G, imparts an intermittent motion to F. The saw is mounted near the further edge of the carriage, and by working the lever E of either head block, that extremity of the log can be fed forward to any extent desired. This constitutes the mechanism for setting the log by hand.

I is a long straight bar mounted in suitable bearings, J J, on the near side of the carriage, B, and free to slide longitudinally therein. K K represent adjustable blocks mounted on I. On K is an upright projection, as represented, and E is slotted to fit thereon. The levers, E, of both the head blocks, C C, being thus connected to I, any longitudinal motion of the latter will set both ends of the log simultaneously. On the upper surface of I, near one end, is a rack, as represented, and adapted to receive the segmental gearing on the hand lever, N. By working N, therefore, the bar I may be moved at pleasure, and by adjusting the stop, O, in the curved slot represented at the side of N, the extent of the motion of the latter, and consequently the extent of the motion of the levers, E, and of the parts F F′ may be graduated. This provides a very efficient means of setting both ends of the log simultaneously by hand.

It now remains to describe the device by which this latter movement is effected automatically. On the side of I is a stout projection, I′. On the side of the foundation, A, is mounted in a suitable housing, a vertical bolt, L, which is urged upwards by a spring, not represented. By the means now to be described, this bolt is at each motion of the carriage allowed to remain up until the stop I is brought in contact with it. In this position it holds I stationary, while the carriage moves onward until the levers E have been moved to a certain desired extent, when the bolt L is automatically depressed, and the projection I moves freely past it. The motion of the carriage, B, is then by the ordinary means reversed, and the stop I is again brought into contact with the bolt L, and the levers E E are consequently moved back, feeding both ends of the log forward till at the right point, the bolt L is again depressed, and the projection I moves freely past. None of the parts are again disturbed until the carriage has traversed the whole extent of one cut and returned.

The automatic motion of the bolt, L, is induced as follows :—On the side of L is a projection, not represented, extending towards the carriage, B. On the side of the carriage, B are mounted two hanging cams, S and T, which are distinctly shown in fig. 2. They are mounted in adjustable frames, V M, and confined by stops thereon, V′ M′, so that they can only swing in the directions towards each other. The automatic adjustment of the log is always effected after the carriage has been run entirely back, so as to be clear of the saw. When the projection, I′ meets the bolt, L, the bar I remains stationary, thus moving the levers, E, and causing the pawls G to click over the rack, D, until the enclosed surface of the hanging cam, S, strikes the projection referred to on the bolt, L, and depressing it, allows the stop I′ to pass, after which the bolt L is again allowed to rise. On the return motion, the projection I′ again meets the bolt L, again stops the bar, I, while the carriage moves onward, and changes the levers, E E, back to their original positions, at which moment the cam T becomes effective, and in its turn depresses L by acting on the projection referred to and allows I to pass freely. By moving V and W into positions nearer together or further apart, the thickness of the boards or stuff sawed may be controlled with perfect accuracy, and the log is thus fed up to the saw without any assistance from the attendant until the whole is consumed, or so much thereof as it is desirable to saw.

This ingenious apparatus is the invention of Hiram Wells, of Florence, Mass., and was patented on the 9th of June last. It may, of course, be employed in connection with double or single saw mills, and is susceptible of many modifications. Either or both the levers E may at any time be lifted out of connection with the bar I, by simply grasping the handle, as represented, and the apparatus gives a very perfect control of the feed of the log in every respect. For further information address H. Wells & Co. at the above place.

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Scientific American.

NEW YORK, AUGUST 29, 1857.

The Commissioner of Patents.—Who will he be?

MESSRS. EDITORS.—It has long been a question with me whether Judge Mason would really resign the Commissionership of Patents, because of certain facts known only to myself and a few of Judge Mason's intimate friends. But since he has resigned, another question has arisen, and that is, "who will be his successor?" The position of Commissioner of Patents, as you are doubtless aware, is one which must needs be filled by the ablest and soundest minds. There are but few men who possess the necessary requisites for the office, and from their midst President Buchanan will doubtless make the selection. Having spent most of my time in Washington for the past ten years, and having been a great observer, I have thus been so situated as to "learn and see" for myself. I enjoyed not long since a conversation with a cabinet member, on the subject of the Commissionership, and was informed that but three candidates possessed the qualifications (in the eye of the President.) These were the Hon. Charles T. James, of Rhode Island; Dr. Thomas T. Everett, Chief Examiner of the Patent Office, and the Hon. Edmund Burke, who presided over the affairs of the Patent Office with such marked ability during the reign of the Polk dynasty. Either of these gentlemen would make an excellent officer. Gen. James is a man of no ordinary talent. He has seen much and read much, and being a decided mechanical genius, he would make a splendid officer. Dr. Thomas T. Everett is a New Yorker, of old Knickerbocker stock. He is the youngest brother of Hon. Richard J. Everett, of New Jersey, and has been an inmate of the Patent Office for nearly fourteen years. He is a gentleman of sound mind and clear understanding, perfectly conversant with the Patent Laws, and should he be appointed, he would reflect credit and honor upon the department. Of Edmund Burke I can add nothing to that which has already been said in his favor. Every body knows his superior qualifications and all will rejoice at his appointment, if made. More anon. J. G. B. G.

St. Nicholas Hotel, New York, Aug. 17.

The above letter, written by an officer connected with one of the government departments at Washington, has a sort of semi-official character about it, and if reliable in its more essential particulars, it shows that the President is not unlikely to impose upon himself, and sacrifice in a measure the highest interests of an office which he is called upon to guard. We have not a word to say against the appointment of Dr. Everett or Edmund Burke. If the President sees fit to select either of these gentlemen to fill the office of Commissioner of Patents, the public will not object. Not so, however, in the case of Gen. James, and the mere mention of his name in connection with the office, and the somewhat extravagant praise which is heaped upon him by our correspondent, serves only to convince us that the latter has yet to "learn and see." We have nothing to do with Gen. James as a private citizen. In his proper place he is all well enough, for aught we know, and he might, as our correspondent suggests, make a "splendid officer," but it would be in the character of a General, rather than in the chair so lately vacated by one of the most gifted mechanical and judicial minds in our country.

If the President has any desire to examine into the special qualifications of General James for this office, we invite him to read over, only once, (for Mr. Buchanan is an eminent lawyer) the "New Patent Bill" published on page 292, Vol. 11, of the SCIENTIFIC AMERICAN, and once reported to the United States Senate; General James, Chairman, and putative father. We think after this perusal, which will not take long, the President will not be incumbered with more than two candidates in the above list.

This new "patent rat trap" bill—so denominated by some of our cotemporaries—never attained to the dignity of a hearing in the Senate, and so far as the views of inventors and the public generally were expressed, it found no favor anywhere. The bill was a "monstrosity" in legislation, and was so treated.

With all due deference to our correspondents' opinions, we are satisfied that General James *has not* the peculiar qualifications, judicial and scientific, which would fit him to succeed Judge Mason. Besides, if we mistake not, he has some interest in the extension of certain important patents, which have been the subjects of considerable litigation. Should this prove to be true, (which we do not affirm) it alone ought to shut the Office against him. It is our opinion that General James is quite as likely to be struck by lightning as he is to become Commissioner of Patents; and that the President ever thought of conferring that office upon him, we do not for a moment believe. We should almost as soon look for the appointment of C. C. Chaffee, or either of the other members of the late Committee on Patents in the House of Representatives. Indeed, we think the President should not overlook these parties; they should be rewarded for the service they rendered to the mechanical interests of the country in withholding their report against the extension of the Woodworth Patent until it had *expired*—until every spark of hope for getting the bill through had fled.

In addition to the names above suggested, rumor mentions S. T. Shugert, Esq., now Acting Commissioner, Colonel Hughes, of Baltimore, a well known engineer, Judge Ingersoll, of New Haven, a United States Circuit judge, and Judge Sherman, of Michigan.

The Zodiacal Light.

With all the progress of modern science there are many matters, even in the fields most explored, which are, as yet, extremely obscure. It has been proved that our earth is enclosed in an atmospheric coating, which diminishes rapidly in density as we ascend through it, so that one half of its weight lies in a stratum within a thickness of three miles of the level of the sea. How much above this the fluid may extend before it becomes so thin as to be considered absolutely *nothing*, is only a subject for conjecture; but there are reasons for supposing that the extreme limit of the atmosphere is not more than from forty to sixty miles above the earth, and its tenuity is such that no balloons, birds or insects can fly higher than four or five miles. Beyond the limits of our atmosphere exists either empty space, or space believed to be uniformly filled with an extremely light and almost imperceptible ether, which is of sufficient consistency to convey the pulsations which we term light and heat, from the sun, and probably to retard, in some as yet imperceptible degree, the motions of the various planets, comets, etc., which compose our solar system; but with this exception, the traveler who should, like Shelley's *Queen Mab*, travel through those regions is supposed to pursue a way more uninteresting than even that of the overland mail to Utah; in short, the space is supposed to be "filled with emptiness" except in the immediate vicinity of those planets which are enveloped in atmospheres.

But there are three classes of appearances which can only with great difficulty be made to tally with this theory, or, indeed, with any other. These are meteors or shooting stars, the aurora borealis or polar light, (the term northern light is evidently local, as it is equally observed about the southern pole,) and a mysterious hazy and changeable appearance, the zodiacal light. The latter alone was the subject of two papers read at the late meeting of the Scientific Association at Montreal, and will be amply sufficient for our present brief notice, leaving the others for a more leisure hour.

Capt. Chas. Wilkes, of the United States Exploring Expedition, who had enjoyed opportunities of seeing it from almost every portion of the earth's surface, thinks the zodiacal light consists of a perpendicular column of the atmosphere, directly over the point at which the sun is at the moment vertical, while the Rev. George Jones, who has observed it with care for a considerable period through the clear atmosphere of Quito, in Ecuador, South America, a city situated a mile above the level of the sea, finds the zodiacal light visible entirely across the sky from west to east, and thinks that his observations completely establishes the fact that this light is a circle surrounding the earth. In short, he thinks our earth is encircled by a ring like the rings of the planet Saturn, but somewhat fainter. He has worked out all the elements of this ring, and shows that it forms an angle of 32° 20′ with the ecliptic, the ascending node being at longitude 62°. The width of the ring is about 28°, as seen from Quito, and its distance from the earth something like 100,000 miles, or about twelve times the diameter of our planet, and nearly half the distance of the moon. If this be established, the diagrams to be used in future lectures and books on astronomy must be very materially altered, and a ring of considerable thickness, but of unknown breadth must be supplied. That this is no idle whim is shown by the fact that it was developed at some length in a convention of the highest scientific authorities on the Western Continent, and received with considerable favor. Professor Peirce (B. Peirce, of Cambridge, we presume) is reported as speaking at some length of the novelty, value and interest of this view of zodiacal light. He said we might be proud of its origin in our country, but we should also be careful that all necessary criticism should come from our countrymen. The zodiacal light, he thinks, cannot be composed of small pieces, because it can readily be shown that they would pass in conflicting currents. But, he asks, "if gaseous, why does it not show the great tides which our large and heavy moon would produce? That it is really a ring is manifest, but there is a difficulty in reconciling the existence of a ring with the non-appearance of tides in it."

The subject is one of the class of speculations on which we presented our opinion at sufficient length last week, but also one the magnificence and the unexplainable character of which is peculiarly interesting. It is said that the beauty of this light in the tropics cannot be imagined by those who have only seen it in our northern twilight.

The Adriatic.

It is now confidently expected that the steamship *Adriatic* will make her trial trips during the month of September, and it is even hoped that she may be ready to take her place in the line by Sept. 12th. The extensive alterations are now approaching completion.

The condensers are surface condensers, with a vacuum both without and within the tubes. The tubes lie horizontally, and receive the steam to be condensed in their interiors. Allowance for the expansion and contraction of the tubes is made, by allowing the heads, in which the tubes are inserted, to go and come on guides or slides provided for the purpose. In each condenser there are two nests of tubes connected to separate heads or hollow shells, and presenting a sufficient amount of surface to condense the steam very rapidly. The salt water which surrounds and circulate, among the tubes is enclosed in a stout vessels and a vacuum is maintained on the whole, there being one air pump for the salt water outside the tubes and shells, and another for the fresh water, air, and uncondensed steam abstracted from within the tubes. The air pumps are worked from eccentrics on the main shaft, the friction of which, though necessarily great, can hardly produce any difficulty, as the eccentrics are made very wide, and great care is taken to prevent the possibility of heating. The actual width of the bearing surface of each eccentric is 18 inches, and the diameter is about four feet. The throw will be increased by stout levers intervening between them and the pumps. All these parts, and, in fact, the whole ship, with the exception of the valve motion, will be completed by the 1st of September.

The valves now to be employed are balance puppet, similar to those in general use on American steamers for the ocean and lakes. The valve motion is constructed on Sickles' patent of 1845, but with some peculiarities adapting it to the circumstances under which it will be compelled to work in this vessel. The *Adriatic* has inclined oscillating engines, and the stems of the valves will, at some parts of the stroke, lie in a very much inclined, in fact, in nearly a horizontal position. The angle made with the horizon at one point is only about 22 1-2 degrees. As the valves are to descend principally by gravity, it has been deemed necessary to provide especial means to insure their prompt descent. The exhaust valves are pulled down by positive mechanism, and the steam valves, besides the anti-friction wheels or rollers to ensure an easy motion, will probably be urged downward by the tension of powerful springs, if such are found necessary. The construction of the valve motion is now being pushed with all the energy possible. Some of the parts are being finished at the Novelty Works, where the ship lies, other parts at the Allaire Works, Secor's, and several other shops in the city and vicinity. A part, we believe, is even being constructed at Providence.

A Handsome Present.

It is not expected that one person will receive a present of $1,500 for obtaining the 15 largest lists of subscribers for the new volume of the SCIENTIFIC AMERICAN, but any young man may make $300 or $500 with ease and devote but little time in doing it if he will follow our advice. It is this:—Take a copy of our new prospectus, and in the evening, or any other spare time, call upon his shopmates, his neighbors, his townspeople, or any persons he thinks would like the SCIENTIFIC AMERICAN, and ask them to subscribe. By a little effort, any one can get a prize of greater or less magnitude, and we hope our young mechanics will avail themselves of this opportunity of earning a few hundred dollars for themselves, and at the same time confer a favor upon us by increasing our circulation, and on the subscribers they obtain, by furnishing them information worth many times more than its cost.

One person may form any number of clubs and thus get several prizes. Subscriptions may be sent from different Post offices and at any time previous to January 1st, 1858. See prospectus giving full particulars, or last page of this paper. Send to the publication office, 128 Fulton street, for printed prospectuses and circulars.

Commissioner's Report for 1856.

We are indebted to S. T. Shugert, Esq., Acting Commissioner of Patents, for copies of volumes 1 and 2 of the Commissioner of Patents' Report for 1856. Our readers will do well to bear in mind that only two thousand copies of this report are placed at the disposal of the Commissioner of Patents for the purposes of official distribution; the balance is sent out by members of Congress. Therefore, those who may wish to procure a copy, and who cannot be supplied through the Patent Office, will do well to send an early request to the Representative in Congress from their district. Vol 3, which will contain engraved plates of the various patents, is not yet issued; thus realizing the trite old saying, that "large bodies move slow."

The introductory remarks of Judge Mason to this report will be found on page 198 of this volume of the SCIENTIFIC AMERICAN.

Death of Doctor Dick.

Our late foreign exchanges announce the demise of this venerable christian philosopher and man of science. He expired at Broughty Ferry, in Scotland, where he had lived for the long period of more than thirty years, prosecuting his astronomical studies, engaged in the labors of an unostentatious benevolence, and enjoying the warm respect of all around him. He had attained the ripe old age of eighty-three. The removal of one who had so far exceeded the ordinary limit of human life is scarcely a matter of surprise; but the example of his calm, genial, honorable, and useful history is one that should not be without its salutary influence. A year or two ago, his services in popularizing science were acknowledged by the gift of one of those scanty pensions which are allotted as the reward of such labors.

Mortification in a wounded or diseased part may sometimes be prevented by surrounding it with charcoal.

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Hulling Cotton Seed.

An excellent machine for hulling cotton seed was patented a few weeks since by Wm. R. Fee, of Cincinnati, O. It is said to overcome the great difficulty heretofore experienced in hulling this seed, and is represented to cut the covering of the seed without bruising, mashing, or expressing the oil therefrom. The seeds, after being cut, are subjected to a screening operation, which effectually knocks the kernels out of the divided hulls. The inventor has been extensively engaged in the manufacture of cotton seed oil in Cincinnati, and has, we learn, successfully introduced his improved machine in several of the large cotton seed oil factories in different States.

Rapid Photography.

Experiments were made in Bombay in November, 1855, for the purpose of estimating the limit of the photogenic action of the direct solar rays, and also, if possible, to measure the diameter of the sun within a small fraction of a second of angular measurement, by combining the photographic and the electric telegraphic processes, employing photography to estimate the element of time. The general result of the first experiment is, that it requires an exposure to the direct light of the sun for only one twenty-thousandth part of a second in order to obtain on a plate coated with collodion an impression, which may be completely developed by the ordinary processes.

The Great Eastern.

It is now said, we do not recollect on what authority, that the *Great Eastern* has been engaged to make three trips to this country instead of one, and that not only are excursion tickets to be issued to allow passengers from Great Britain to come to this country and stay some six weeks and return at very reduced rates, but tickets for the European tour are to be sold in the same manner on this side. If this plan is carried out we may expect a renewed impulse to be given next year to the already very fashionable and instructive practice of traveling to Europe. By the way, we may here express an opinion that nothing is better for a gentleman of forty who has closely applied himself to business till life has become dull and monotonous, than a tour of from three to ten months in the great centers of attraction in Great Britain and Europe, while nothing is worse for a young man just forming his character than the same method of spending that amount of time.

According to the August number of the *Artizan*, the work on this great steamship is now progressing quite successfully. The whole of the hull is completed externally, including riveting and caulking. The arrangement for supporting the rudder has been reconsidered, the present arrangement being that the heel of the rudder is stepped into a suitable bearing projecting from the rudder-post, whilst at the upper end, within board, it has a circular cast iron flange, fitted with friction rollers, which works upon a table supporting the entire weight of the rudder, the flange, with its rollers, being similar to a small turn table; thus the power required for working the rudder to steer the ship will be but small, and the wear upon the step will be trifling.

The paddle wheels are now completely framed together, and fitted permanently upon the paddle shafts ready to receive their floats.

The scuttles for the ship's sides are being put in. There are 300 large galvanized cast iron frames, fitted with brass lights 14 inches diameter clear opening, glazed with inch glass; they are strong and well fitted together; the annular groove in the brass frame is fitted with cork, for rendering the joint water-tight. There are also 200 smaller lights similarly constructed; the frames are glazed with three-quarter glass, 8 inches diameter clear of frame.

Before the beginning of 1858 the whole of the joiner work will be complete and ready for the decorators, upholsterers, &c.

Air Engines Again.

Since the air engines of the steamship *Ericsson* have been changed to steam engines and the furnaces, regenerators, compressing pumps, &c., of the "caloric" apparatus removed to make way for the more practically approved boilers, condensers, air pumps, and other paraphernalia connected with the now common-place steam engineering, little has been heard of Captain Ericsson or his plans, but he has not been idle. Profiting, or endeavoring to profit, by the experience obtained in each succeeding effort, he has continued to build and modify his favorite style of engine, having completed we think seven distinct machines, mostly double cylinder engines of comparatively small size, since his last trial on the ship. He has now floating in the Hudson a small steamer, or *air-er*, about seventy feet long, which he has succeeded in driving at a good rate by the combustion of an almost incredibly small quantity of pine kindling wood. There are two engines, horizontal, single acting, and apparently about thirty inches diameter by thirty-six inches stroke. The vessel is an open boat, or mammoth yawl, and the paddle wheels are about ten or twelve feet in diameter. We believe air alone is the fluid employed as a medium to generate the power but can not say whether the regenerator or other of the features principally relied on in the former efforts are still employed. We shall endeavor to keep our readers posted, if anything of importance is developed.

GUMAER'S HARVESTER.

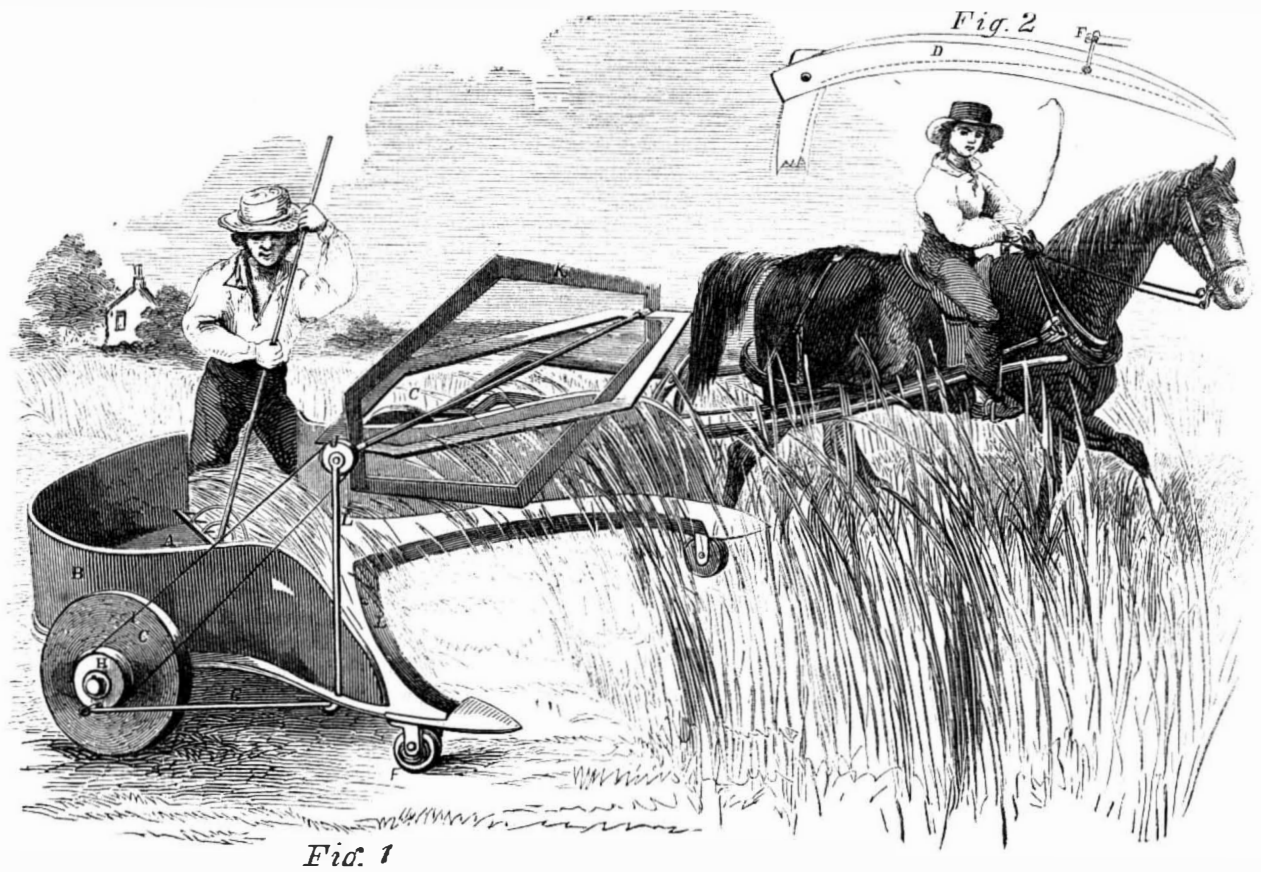

Fig. 1

Fig. 1 is a perspective view of a harvester invented by S. Gumaer, of Chicago, Ill., and secured by patent dated August 4, 1857. The peculiarity is chiefly in the cutters and in the means of presenting the grain thereto. Fig. 2 represents the cutters separate from the machine.

A is the floor or platform, and B B are the elevated sides. C C are the ordinary large bearing wheels, D D are cutters somewhat resembling large knife blades or scythes, E E are leading wheels, which support the weight of the front edge of the platform, and F F are bell-cranked shaking levers, by means of which, through the intervention of the connecting shaking rod, G, a shearing motion is imparted to both the cutters. H is a pulley on one of the wheels, and I a belt which communicates motion therefrom to J, a small pulley on the shaft of the reel, K. The reel, K, is of greater diameter in the middle than at the ends, a form adopted in many other descriptions of reapers, and is mounted on standards, L, at the proper elevation to gently strike the grain and incline it over toward the knives at the best angle for cutting. As the machine is moved forward by the horses, the connecting rod, G, generates a peculiar and reciprocating motion in the cutters, C C, and the straws are severed along the edges of the knives by an ordinary cutting action, like that of a scythe, and at the junction of the cutters by an additional shearing action analogous to that of scissors or shears.

The machine may be driven at any speed, as there are no parts which reciprocate with such velocity as to endanger the safety of the machine, or to absorb power by such motion in any serious degree in fact, the cutting is performed more efficiently and perfectly with the machine driven at a tolerable speed than when driven very slowly.

Mr. G. estimates that the weight of this harvester will not exceed 400 lbs., and it can be afforded to the farmer at retail, ready for use, at $65. This latter is a very important consideration, and the former is little less so, as the side draught depends much on the weight of the machine.

The claim of the inventor comprises the combination of the blades, D D, with the peculiarly constructed platform, A, and the center swell reel, K, when said parts are arranged to operate in relation to each other, as and for the purpose set forth

For further information, the inventor may be addressed as above.

Ventilation of Buildings.

The mode of ventilating the two new halls of Congress is to be as follows:—A column of air, previously passed through hot water pipes in the winter, and through jets of ice water in summer, is to be forced, by means of a large fan worked by steam, up a hollow shaft to the space between the roof and ceiling, through the latter of which, being thoroughly perforated, it will gain admission into the room, and displace the vitiated air through apertures in the base of the walls. This theory of ventilation is original with Capt. Meigs, and is yet untested, and doubts have been expressed by scientific men of its practicability. However, if it should be found impracticable to introduce the fresh air from the top of the room, the ventilating apparatus will be so arranged as to introduce it from the bottom, without any material alteration or additional expense.—*Washington Union.*

[We can see no difficulty in this except the power and attention required by the fan, and predict that the ventilation will be very perfect. It will be necessary to provide pretty carefully against allowing any sound from the fan to reach the interior of the halls.

Saleratus vs. the Teeth.

The bony portion of our frames are covered with flesh, and preserved from all direct external influences, except the thirty-two bones which we (some of us!) use in masticating our food. These are generally a great source of trouble, and it is perplexing to find authorities differing very much with regard to the effect of various agents on them. At the Dental convention lately in session at Boston, some of the dentists asserted that the main cause of defective teeth was the use of saleratus and cream of tartar in the manufacture of bread, and Dr. Baker gave the results of some experiments which he had made by soaking sound teeth in a solution of saleratus. The teeth were destroyed in fourteen days. Mr. Spaulding, of St. Louis, did not believe that alkali in general injured the teeth, but acknowledged that saleratus did.

Manufacture of Combs.

It is said that the greatest comb manufactory in the world is in Aberdeen, Scotland. There are some two thousand varieties of combs made. There are thirty-six furnaces for preparing horns and tortoise shell for the combs, and no less than one hundred and twenty iron screw presses are continually employed in stamping them. Coarse combs are stamped or cut out—two being cut in one piece at a time. The fine dressing combs and all small tooth combs are cut by fine circular saws, some so fine as to cut forty teeth in the space of one inch, and revolving five thousand times in one minute. The annual consumption of hoofs amounts to 4,000,000.

The Twist in the Transatlantic Cable.

From a card published by Messrs. Newall & Co., who commenced last and finished first the construction of half the great cable, it appears that both the cable-manufacturing companies twisted their portion according to samples sent them, that N & Co.'s sample had been received a long while before, and the Directors, Engineer, &c., of the Telegraph Company had been changed in the interval. The fact that the lay of the two halves was different was discovered during the experiments for testing the strength, soon after both establishments had commenced the rapid manufacture of the cable, but neither was willing to change the twist.

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J. B., of La.—By increasing the size of your driving wheel to give an increased speed to the mill, and running your engine slower, you will use less steam, but by working with a reduction of power in proportion to the reduced speed of the engine, and the work performed can only be in proportion to the power employed.

David Dutton, Sinking Spring, Ohio, wishes to purchase the best turbine wheel in use, also the best planing, tongueing and grooving machine. He also wishes to know the reason why a cat will light on its feet when he'd up by all fours and suddenly let down?

M. W. B., of Mass.—A subscriber desires us to tell you that he uses burned umber and beer with excellent success for staining pine wood. It gives it the color of black walnut, and makes an excellent stain for many kinds of cabinet ware.

J. C., of N. H.—You have a perfect right to take out a patent on an improved machine after one has been sold and put in use. The application should be made before the machine has been two years in public use, however, to make the patent valid.

W. L. & Co., of Wis.—Your log is substantially the same in principle as what is known as Massey's log, an old English invention, and we have seen models of others operating in the same manner. We do not believe that a patent could be secured on any of it. Your other machine is not quite clear to us. You had better send us a drawing of it. Do not be ashamed to give us your address in full.

J. C. R., of Pa.—Minie balls can only be procured by having a mold made to fit your rifle. There are no balls or molds for sale in this city. Phonography is used by only one man in our establishment.

J. P. L.—We understand your device. It is very old and not patentable.

I. A. H., of Wis.—Soak some small pieces of sponge in a solution of molasses and water. Place the pieces in those parts of your house where the ants are most numerous. Occasionally, when the sponges are covered with the insects, destroy them by pouring on boiling water. In a short time the vermin will disappear. We have tried this plan with success.

J. McC., of D. C.—We hardly understand what you mean by "getting a face" on a belt, whether of rubber or other material, but it is, of course, understood that no animal oil must be applied to a rubber belt unless you wish to dissolve it. Rubber belts may be covered with boiled linseed oil at short intervals to good advantage, and the practice will do much to compensate for the wear of the surface.

J. W., of Conn.—"How high water will throw" from an aqueduct under any given head is one of the greatest problems in hydraulic engineering, and cannot be solved even approximately without a knowledge of the circumstances. If the fountain is at a considerable distance, and the pipe small, rough and crooked, and the aperture large, it will not "throw" at all. In general terms it will throw as high as the level of the supply, minus the resistance due to the friction and the resistance of the air.

J. Kersey, of Hazleville, Del., wishes to know where he can buy the best machine for cleaning the seed from broom corn.

R. C. B., of N. Y.—Engines substantially like the steam engine, but impelled by water pressure, have been known for many years. There is one published in Hebert's Cyclopædia in 1837, and another in Byrne's Dictionary, though we believe Byrne is wrong in saying that the first engine of the kind was used in England in 1844. Some patents have been taken in this country for improvements in the valves of these engines.

J. A. R., of Mass.—We can only say again that there is certainly nothing patentable in your gas regulator. The full equivalents have been used in many different ways. A chamber fitted with layers of wire gauze has been used; also a chamber filled with shot; also a chamber filled with raw cotton. These things have all been used, and are probably in use at the present time. All of the above contrivances, especially the gauze, are equivalents of your contrivance.

S. A. C., of N. J.—You request us to furnish you with additional informtion in regard to a circular saw mill, of which you saw a notice in some other paper extracted from the Scientific American. If you would but become one of our subscribers, you would have no occasion to make such a request of us. We must refer you to the back numbers for the information.

C. M. S., of Pa.—Many attempts have been made to introduce the steam plow into use, but complete success has not yet been attained. There are a number of ingenious inventors now at work on this subject, and we hope some grand developments will be made towards its perfection within the next six months. A number of patents have been already issued.

J. B. Smith, of West Milton, N. Y., wishes to purchase a good spoke lathe.

W. M. Findley, of Dayton, Pa., wishes to correspond with the maker of the best turbine wheel.

J. S. P., of Cal.—We thank you for the information you have sent us, in reference to the newly discovered iron mine. The Argand burners for gas lights are well known. We have some in use, but cannot recommend them as equal to the ordinary fish tail or bat's-wing burner in point of economy. By the late numbers of our paper you will learn something more in regard to Hussey's steam plow.

F. B. S., of N. H.—The error into which you have fallen is in supposing that a caveat affords absolute protection against infringement. It has no such force, and is, on the whole, a very harmless affair. It confers upon the caveator the privilege to receive notice of an interfering application, upon which a patent is liable to issue, for the space of one year. It has this extent, and no more.

H. Meck, of Iowa.—We have not seen a corn-stalk cutter arranged like yours. Probably a patent could be obtained on your improvement, if the plan is well carried out. As you neglected to give us your post office address, we could not write to you.

A. S., of Pa.—You say you made and patented a contrivance, and afterwards assigned one-half of the right to another, and that subsequently you made improvements upon the original, and design to secure a patent for them. The question you desire to have answered is whether the assignee has a right, under the original transfer, to your new improvements? We answer no, unless there was a covenant between you that all subsequent improvements should also belong to the assignee.

W. H. L., of Miss.—The Atlantic Telegraph is paid out from the sterns of the ships under ordinary circumstances, but provision is made for paying it from the bow should it be found preferable to do so in consequence of a storm or any other cause.

J. A. S., of Ill.—You inquire of us if we are acquainted with any reliable lotteries in Maryland and Delaware? As we have never been so "verdant" as to be caught buying tickets in such establisments, we are rather poor authority on the subject.

H. B. S., of Iowa.—You inquire of us what we think of your proposed apparatus for supplying the lungs with electric fluid. We reply, not much. The theories and schemes of Dodd and others are speculative, and require to be proven before we could endorse an apparatus for sending lightning into the lungs or among the digestive organs. It might prove something more than a joke to operate on these organs in the way you propose.

J. W., of Ky.—The engraving of your device for condensing liquids in gas pipes is now ready; and we are only waiting for room, to publish it. As soon as we have space it will appear. In a short time you will get a report from us on your rejected application.

S. P. N., of N. Y.—If you wish to bore a hole through glass, use a bow and steel drill, kept moist with spirits of turpentine. You will be able to accomplish your object in this way.

Money received at the Scientific American Office on account of Patent Office business for the week ending Saturday, Aug. 22, 1857:—

W. J., of Ill., $25; T. S., of Tenn., $25; C. & Z. W., of N. J., $32, F. P., of Pa., $22; G. G, of Ill., $25 E. H. B., of Mass., $30; A. J. C., of Ind., $20; M. J. W., of Ky., $20; T. S., of N. Y., $30; S. P. G., of Wis., $25; S. & T., of Conn., $30; H. A. C., of N. J., $30; E. M. & J. E. M, of N. Y., $30; S. L. W., of Pa., $25; R. S. J., of Conn., $27; C. S. S., of L. I., $30; C. W., of N. J., $30; E. R., of N. Y., $30; D. W., of Ohio, $35; N. A. P., of Tenn., $30; S. P. M., of Ohio, $25; C. M. S., of Ind., $25; G. D. B., of N. Y., $100; J. W., of N. J., $30, J. W., of Pa., $30; McN. & G, of Ill., $25; G. C. G., of Ohio, $30; C. H. A. of N. Y., $30; E. G., of Mass., $30; E. C., of Pa., $250; T. E. L., of Wis., $30; W. H. T., of Ill., $30; J. McL., of N. Y., $25; M. D., of N. Y., $35; E. G. O., of N. Y., $35; H. F. V., of N. Y., $25; L. G. & Co., of N. Y., $125.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Aug. 22, 1857:—

W. J., of Ill., J. W. R., of Pa.; S. P. G., of Wis.; C. C., of Pa.; N. A. F., of R. I.; T. S., of Tenn.; G. G., of Ill.; E. G. O., of N. Y.; C. & Z. W., of N. J.; S. L. W., of Pa.; J. McL, of N. Y.; S. P. M., of Ohio; M. D, of N. Y.; C. M. S., of Ind.; McN. & G., of Ill.; H. F. V., of N. Y.; F. O., of Pa.; J. W. G., of Mass.; W. T. C., of Mass.

NOTICE.

Back Numbers of the Present Volume—Almost every mail brings letters of inquiry from our patrons for certain numbers of the Scientific American, which we are unable to supply. To save subscribers the trouble of writing for such numbers as we have not got, we append a list of the numbers which are entirely exhausted in Vol. 12:—1, 2, 3, 4, 6, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 2, 24, 27, 30, 31, 35, 36, 39. Those numbers that are not specified above we can supply, and shall be happy to do so to those who have missed them.

Terms of Advertising.

Twenty-five cents a line each insertion. We respectfully request that our patrons will make their advertisements as short as possible. Engravings cannot be admitted into the advertising columns.

☞ All advertisements must be paid for before inserting.

AMERICAN AND FOREIGN PATENT SOLICITORS.—Messrs. MUNN & CO., Proprietors of the Scientific American, continue to procure patents for inventors in the United States and all foreign countries on the most liberal terms. Their experience is of twelve years' standing, and their facilities are unequalled by any other agency in the world. Consultation may be had with the firm between nine and four o'clock daily, at their principal office, 128 Fulton st., New York. Our branch offices are corner of F and Seventh sts., Washington, D. C., Nos. 66 Chancery Lane, London, 29 Boulevard Saint Martin, Paris, and 3 Rue Therrsienne, Brussels. Circulars of information concerning the proper course to be pursued in obtaining patents through our Agency, the requirements of the Patent Office, etc., may be had gratis upon application to the principal or either of the branch offices. Communications and remittances should be addressed to MUNN & CO., No. 128 Fulton st., New York.

NOTICE—To Inventors, Patentees, and Scientific Gentlemen—H. BOEHMER would respectfully notify the above that he is prepared to manufacture and execute all orders for models or scientific instruments at the shortest notice, and on most reasonable terms. 1* H. BOEHMER, 69 Fulton st., New York.

METALLIC LETTERS AND FIGURES—To put on patterns.

ROMAN STYLE.	Price,	3 cts.	3 cts.	4 cts.	4 cts.	5 cts.
	Size,	5-16	3-8	1-2	5-8	3-4.
	Price,	6 cts.	7 cts.	8 cts.		10 cts.
	Size,	1 in.	1 1-4	1 1-2		2 in.

Also Gothic Style—Size 1-4 inch; Price three cents.

ROMAN STYLE. Branding Irons. 4 cts. 4 cts. 5 cts. 6 cts. each. 3-8 1-2 5-8 3-4 inch.

N. B.—The above are the sizes on the face of the letters. Manufactured by COWING & CO., 1 Seneca Falls, N. Y.

SECOND-HAND STEAM ENGINE AND BOILER for Sale—One 8-horse Upright Steam Engine, Boiler 30 inches diameter, 25 feet long, nearl new, and in good running order. For particulars address H. B. MATHER, West Norwalk, Fairfield co., Conn. 51 2*

IRON PLANER FOR SALE—A second hand Iron Planing Machine; has been run but a short time, will plane ten feet long, three feet wide, three feet high. Cost $860, will be sold for $550 cash. Address GEO. S. LINCOLN & CO., Hartford, Conn. 51 tf

SAWS—FOE & CO.'S PATENT GROUND SAWS, Plastering Trowels, &c., can be had, wholesale and retail, at the principal hardware stores, at the salesrooms of the manufacturers, 29 and 31 Gold st., or at the works corner of Broome, Sheriff, and Columbia streets, New York. Illustrated catalogues, containing prices and information interesting to sawyers generally, will be sent by post on application. 51 3mos

DR. D. BREED, late Assistant and acting Chief Examiner in the U. S. Patent Office, has established at Washington, D. C., a chemical laboratory for experiment and analysis, in order to test and improve processes of manufacture, and mechanical devices employed in the chemical arts, and to procure and defend patent rights. After many years devoted to chemistry (having studied in the German laboratories) Dr. Breed feels confident in offering his services as a practical chemist to inventors and others interested in the chemical arts and manufactures. 50 4*

THE POLYTECHNIC COLLEGE of the State of Pennsylvania, West Penn Square, Philadelphia.—The Polytechnic College, incorporated by the Legislature, 1853, on the plan of the Industrial Colleges of Paris and Berlin, affords a thorough professional education in civil engineering, mining engineering, mechanical engineering, industrial, analytical, and agricultural chemistry, metallurgy and architecture. Ample facilities are provided for field and laboratory practice, and assistant engineers may perfect themselves in any branch of their profession. The Fifth Annual Session will commence on Monday, Sept. 21, 1857. Apply to Dr. A. L. KENNEDY, President of Faculty, Polytechnic College, Philadelphia. 51 4*

WEST PHILADELPHIA CHEMICAL WARE Factory—Acid and fire-proof ware of all shapes and sizes, up to 200 gallons, made to order; warranted to resist acids of all kinds, and stand changes of temperature, from extreme heat to cold. MORO PHILLIPS, 27 North Front st. 51 13*

TO WHEELWRIGHTS—Wanted, a first-rate Wheelwright, accustomed to heavy work, such as wagons and carts, to go to a healthy city in South America under atwo years' engagement. He must be an American, without a family, and be able to furnish unqualified testimonials as to character and capacity. The opportunity is a good one for a man of the right stamp. Address S. T. WILLIAMS, Box 2959, P. O., New York. 1*

SECOND-HAND MACHINISTS' TOOLS—Consisting of 20 Engine Lathes, 9 iron Planers, 4 Upright Drills, Hand Lathes, Chuck Lathe, Gear Cutters and Vises, all in good order and for sale low for cash. For particulars, address FRANKLIN SKINNER, 14 Whitney ave., New Haven, Conn. 51 tf

5,000 AGENTS WANTED—To sell three new and unequalled inventions, wanted and selling everywhere. My agents have cleared over $20,000 on them. Diplomas, silver medal and four patents granted on them. For four stamps you'll receive forty pages particulars. Best agency in the country. 51 10* EPHRAIM BROWN, Lowell, Mass.

THE TENTH ANNUAL EXHIBITION of the Maryland Institute, Baltimore, will be opened on the 29th of September, and continue to the 2,th of October, 1857. Goods for competition and premiums will be received from 22nd to 24th of Sept. inclusive, afterwards for exhibition only. Mechanics, manufacturers, inventors, artists and others, of the entire country, are respectfully solicited to contribute to the same, and assured that every effort will be made to display their works to the best advantage. Circulars containing rules, regulations, &c., will be promptly furnished by application to JOHN S. SELBY, Actuary. 49 5* JOSHUA VANSANT, Chairman.

MECHANICS' FAIR IN LOWELL.—The Second Exhibition of the Middlesex Mechanic Association will open in Lowell, Mass., September 10, 1857. Contributions will be received until September 5. For information address JOHN W. SMITH, Sup't. 49 3*

FOR SALE AT FLUSHING, Long Island, N. Y.—The business and machinery of John C. Quarterman's estate, consisting of a six-horse power steam engine, a ten-horse power boiler, lathes, saws, boring and drilling machines, rounding machines, saws for scroll work, and a machine for making shovel, coal hod and pail handles, together with all the tools and fixtures. The business has been established from the year 1851, and to an ingenious mechanic opens a good prospect. For particulars apply to JAMES QUARTERMAN, 114 John st., New York, or to SARAH ANN QUARTERMAN, Flushing, L. I., who resides on the place. 49 6

TO HOUSEKEEPERS—I own the copyright of the celebrated 100 Metropolitan Hotel recipes for Cooking, Baking, making Creams, Pastry, Preserves, &c., &c., and will send them by return mail (free of postage) on receipt of four letter stamps. J. R. STAFFORD, 16 State st, New York. 49 4

INCRUSTATION IN STEAM BOILERS—A late patent for removing and preventing incrustation in steam boilers. It has been thoroughly tested, and in every instance has given full satisfaction, by removing all old scale, and preventing the formation of new, keeping the boilers entirely free from incrustation without injury to the iron. Satisfactory proof of its good effects will be given to any wishing to purchase. For sale in individual or State rights. Address Messrs SPENCER, BOARDMAN & SPENCER, Lancaster, Pa., sole agents for the United States. 48 4*

WOODWORTH PLANING MACHINES of superior style and workmanship, of various sizes, and the latest improvements. Also Steam Engines and Boilers, Sash and Blind Machinery, Lathes, Planers, Drills, Belting, and all kinds of Machinists' Tools on hand, and for sale at the Machine Depot, 163 Greenwich st., New York. A. L. ACKERMAN. 45 8

E. G. CUSHING'S Unequalled Straw and Stalk Cutter.—For finished work, or the right of territory, address the inventor, Dryden, Tompkins county, N. Y. 44 10*

CAST STEEL WIRE DRAWING at the Union Works, Paterson, N. J. Orders solicited and carefully filled by CHAMBERLIN & CO. 43 13*

THE PRACTICAL METAL WORKER'S ASSISTANT, containing the Arts of Working all Metals and Alloys, forging of Iron and Steel, &c., with the application of the Art of Electro-Metallurgy to manufacturing processes; collected from original sources and from the works of Holtzapffel, Bergeron, Leupold, Plumier, Napier and others, the whole arranged with numerous engravings on wood—by OLIVER BYRNE. One volume, 8vo. Price $4. Sent by mail free of postage. HENRY C. BAIRD, publisher, 50 2* Philadelphia, Pa.

THE LITTLE BRICK MAKER—The new machine is now reduced in size, so as to be driven by one man. It takes the rough clay, previously one night in soak, tempers and molds 420 bricks an hour, attended by two men and four boys. The brick is beautiful.—Price $65. The larger machines, worked by a horse, making 7,000 per day, $150; 10,000, $200; by steam 16,000, $250; 25,000, $400. For further particulars in a pamphlet containing full instruction on brick-setting and burning, address FRANCIS H. SMITH, Baltimore. 50 2*

MACHINERY—S. C. HILLS, No. 12 Platt street, N. Y., dealer in Steam Engines, Boilers, Planers, Lathes Chucks, Drills, Pumps; Mortising, Tenoning, and Sash Machines, Woodworth's and Daniel's Planers; Dick's Punches, Presses, and Shears; Cob and Corn Mills; Harrison's Grist Mills; Johnson's Shingle Mills; Belting, Oil, &c. 27 e3w

ENGINEERING.—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers and machinery of every description, Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic Self-adjusting Conical Packing, Faber's Water Guage, Sewell's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, Machinery Oil of the most approved kind, etc. CHARLES W. COPELAND, 27 eowtf Consulting Engineer, 64 Broadway.

WOODWORTH'S PATENT PLANING MACHINES of every kind and all prices. A large assortment on hand; and I am prepared to construct any machine to order from ten days to two weeks, and guarantee each machine to be perfect in its construction, and give purchasers entire satisfaction. The patent has expired, and will not be renewed. I make this business exclusive, manufacturing nothing but the Woodworth Machines, and for that reason can make a better article for less money; and with my fifteen years' experience I fully guarantee each machine to come up to what I am willing to recommend, that is, that each machine shall be more than equal to any other manufactured for the same price. JOHN H. LESTER, 57 Pearl st., Brooklyn, N. Y., three blocks above Fulton Ferry. 35 tf

PEARSON CROSBY'S PATENT RE-SAWING Machines.—The Crosby patent for re-sawing lumber, having been re-issued April 28, 1857, and having purchased the right to the same for the State of New York and Northern Pennsylvania, the subscriber is prepared to sell rights to use the machines in the greater portion of the above named territory, and also to furnish the public with these machines. Having re-built my machine manufactory—which was destroyed by fire on the 9th of Feb, last—I continue to manufacture and have on hand for sale, Woodworth's Patent Planing Machines, from $150 to $1,500, and of a quality unequalled by any other manufacturer. Also the separate parts of the machine, namely, planing knives, side tools, fside cutter heads, cylinders, &c., as well as the above named Crosby Re-sawing Machines. JOHN GIBSON, 48 13* Planing Mills, Albany, N. Y.

STEAM PUMPS, Boiler Feed Pumps, Stop Valves, Oil Cups, Cocks, Steam and Water Gauges, sold by JAMES O. MORSE & CO., No. 79 John street, New York. 41 13

BOILER FLUES—All sizes, and any length desired, promptly furnished, by JAMES O. MORSE & CO., No. 79 John street, New York. 41 13

WROUGHT IRON PIPE—Plain and galvanized sold at wholesale, by JAMES O. MORSE & CO., No. 79 John street, New York. 41 13

PROSSER'S PATENT SCROLL SAW has neither sash, slides, nor springs; can be run at thrice the usual velocity, working much more smoothly and rapidly than any other saw. Price complete, on iron frame, $60 LANE & BODLEY, manufacturers of wood-working machinery, Cincinnati, Ohio. 49 4*

ENGRAVING ON WOOD and MECHANICAL DRAWING, by RICHARD TEN EYCK, Jr., 128 Fulton street, N. Y., Engraver to the Scientific American. 16tf

TO INVENTORS AND MANUFACTURERS—Rooms with power, for the exhibition of machinery, can be had in the Depot Buildings, corner of Elm and Franklin sts. The location is extremely desirable for its prominence and convenience to the business part of the city. Apply to T. BENNETT, on the premises. 43 tf

MACHINE BELTING, Steam Packing, Engine Hose.—The superiority of these articles manufactured of vulcanized rubber is established. Every belt will be warranted superior to leather, at one-third less price. The Steam Packing is made in every variety, and warranted to stand 300 degs. of heat. The hose never needs oiling, and is warranted to stand any required pressure; together with all varieties of rubber adapted to mechanical purposes. Directions, prices, &c., can be obtained by mail or otherwise, at our warehouse. NEW YORK BELTING AND PACKING COMPANY John H. Cheever, Treasurer, No. 6 Dey street, N. Y 40 tf

PECK'S PATENT DROP PRESS—The best machine in use for stamping jewelry, ornaments, tin ware, swedging iron, &c. A supply of all sizes on hand and made to order by the patentee, MILO PECK, New Haven, Conn. State rights for sale. 48 8*

FORBES & BOND, Artists, 89 Nassau st, N. Y., Mechanical and general Draughtsmen on wood, stone, &c

STEAM ENGINES, Steam Boilers, Steam Pumps, Saw and Grist Mills, Marble Mills, Rice Mills, Quartz Mills for gold quartz, Sugar Mills, Water Wheels, Shafting and pulleys. The largest assortment of the above in the country, kept constantly on hand by WM. BURDON, 102 Front st., Brooklyn, N. Y. 46 tf

L. D. GOODWIN'S celebrated Patent Central Vent Water Wheel For wheels or the right of territory address J. W. DWIGHT, Dryden, N. Y., or E. C. BRAMHALL, 190 Fulton, N. Y. 44 10*

LAP-WELDED IRON BOILER TUBES.—Prosser's Patent.—Every article necessary to drill the tube-plates, and set the tubes in the best manner. 44 26 THOS. PROSSER & SON, 28 Platt st., N. Y

WOODWORTH PLANERS, STEAM ENGINES, &c.—Twenty-seven years' experience enables me to furnish Woodworth Planers for surfacing one or both sides, planing and matching, rabbiting, beading, or for moldings or clapboards, in any variety of beautiful construction and great power. Ample evidence of the superiority of my machines will be furnished from parties that have other machines in the same mill. Every machine will be accompanied, if desired, with a written warrantee. As some parties have been supplied with machines of another make when they supposed they were getting mine, I would advise that purchasers should buy none unless my name is on in full. Matteawan steam engines, machinists' tools, cotton and woolen, sash, blind and door machinery, leather banding, &c., furnished at the manufactory at Matteawan, N. Y., or at 62 Courtland street, N. Y. S. B. SCHENCK, Agent. 39 tf

THE BEST PLANING MACHINE IN THE World—Patented Nov. 21, 1854 and Nov. 13, 1855. These patents were obtained for improvements upon the celebrated Woodworth Planing Machine. They received a Gold Medal at the last exhibition of the Massachusetts Charitable Mechanics' Association. Machines of all kinds and sizes constantly on hand, which are warranted to give entire satisfaction, and to be superior to any now in use. For further information address the patentee, JAMES A. WOODBURY, No. 1 Scollay's Building, Court st, Boston, Mass 42 13*

OIL! OIL! OIL!—For railroads, steamers, and for machinery and burning—Pease's Improved Machinery and Burning Oil will save fifty per cent., and will not gum. This oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough, and practical test. Our most skillful engineers and machinists pronounce it superior and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The Scientific American, after several tests, pronounced it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer. F. S. PEASE, 61 Main st., Buffalo, N. Y. N. B.—Reliable orders filled for any part of the United States and Europe. 40 tf

NEW HAVEN MFG. CO.—Machinists' Tools, Iron Planers, Engine and Hand Lathes, Drills, Bolt Cutters, Gear Cutters Chucks &c., on hand and finishing. These Tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address, "New Haven Manufacturing Co., New Haven, Conn. 40 tf

HARRISON'S 30 INCH GRAIN MILLS—Latest Patent.—A supply constantly on hand. Price $200. Address New Haven Manufacturing Co., New Haven, Conn. 40 tf

MECHANICS AND MANUFACTURERS—Tennessee Exhibition. The Third Annual Fair of the Mechanics' Institute of Tennessee will be held at Nashville in October next. Exhibitors from all the States will be permitted to enter articles and compete for the first premiums. For particulars address WM. STOCKELL, President, or H. K. WALKER, Secretary. 45 5

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Science and Art.

Steam Cultivation.

Among the tolerably promising devices for plowing or loosening the earth by steam power should be mentioned a steam spading machine, recently patented by G. M. Ramsay, of this city. It is a locomotive with a series of spades behind, to operate in such a manner as to propel the wagon ahead, like the stern wheel to a shallow river steamer, and at the same time to pulverize the soil to any desired depth. The spades are worked by two cranked shafts, which latter are mounted one above the other in an adjustable frame. Dr. Ramsay is now seeking for a capitalist to assist him in bringing it out.

Falconer's Hose Coupling.

With the hose couplings now in use, great difficulty is encountered in effecting a junction or coupling while the water is flowing through the hose; and in the cases where a head of water, force pumps, or fire engines are employed to force the water, the supply must be shut off above the break in the line of hose. The screw coupling now generally used by the fire departments is also objectionable for other reasons, it requires considerable time to "set it up," and complete the joint.

The coupling represented in the accompanying figures has been used by the Perseverance fire company, of Washington, D. C., since April, 1855; and it has been found, by actual experiment, that there is no necessity for shutting off the water, and that the union can be effected with the water flowing, no matter how forcibly. The joint is set up and made tight by a single blow from a mallet, and it may be broken or separated with equal facility.

The halves of the coupling are held together by a species of dovetail, and the joining and separating is similar to the motion of an ordinary draw slide. The parts are made a very little tapering or wedging, so that the faces are drawn together very tightly, and a ring of leather or rubber allowed to project from the face of the female part, makes a perfectly tight contact with the plane face of the other part.

Fig. 1 shows the female, and Fig. 2 the male parts of a coupling. A is the hose and B the metallic neck, in each; C is the dovetail, and D D the stout, lipped flanches on the other part which embrace C. E is the projecting collar of packing material or the hose itself, which fits tightly against the face of C, and F F on each part are simply projections to receive the blows of the mallet or hammer, two or three of which only are required at any time to effect a junction or separation even if the water is flowing very rapidly through the hose.

Fig. 1

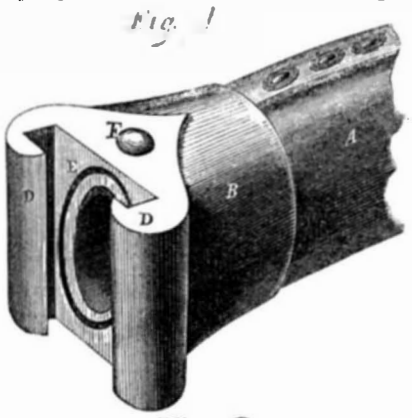
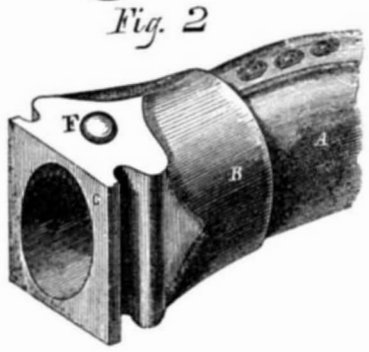


Fig. 2

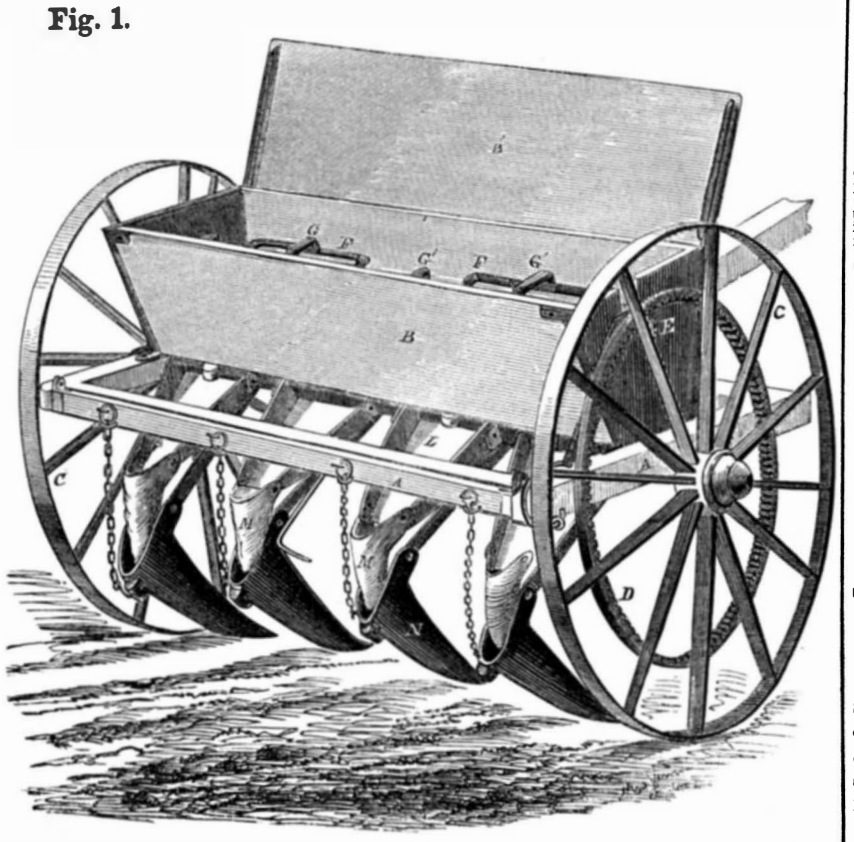


The new coupling makes a tighter joint than the screw coupling, is not so liable to choke from grit or ice, costs considerably less in the manufacture, and presents a much neater appearance than the screw coupling. But its great advantage at fires is the saving of time. Time is all important at a fire, and the loss of five or ten minutes in connecting with screw couplings undoubtedly has often determined the issue of an extensive conflagration.

This coupling was patented June 9th, 1853, by R. J. Falconer, of Washington, D. C. For further information or for rights, address Prof. Chas. G. Page, of Washington, D. C.

MEYERS' SEEDING MACHINE.

Fig. 1.



L. B. and H. A. Meyer, of Massillon, Ohio, are the inventors and patentees of the machine seen in the accompanying engravings. It is adapted to the planting of seed alone, or to the depositing of any fine fertilizer therewith. Provision is made for depositing in drills, or scattering broadcast at pleasure.

The seed or fertilizer is measured off and deposited by the working of double pistons, through holes in the bottom of the seed box, and at each movement an amount of seed equal to the space inclosed between the pistons is allowed to descend through tubes. In case it is desired to plant it in drills, it is let down through flexible spouts into the drill, but in scattering broadcast, it is thrown upon conical deflectors, and allowed to scatter as much as possible.

Fig. 1 is a perspective view of the whole machine, and figs. 2 and 3 are sections of the bottom of the seed box, showing the pistons first in their highest and second in their lowest positions.

A is the frame of the machine; B the seed box, and B' the cover; C C are carrying wheels; D is an internal gear on one of the wheels, and S a pinion meshing therein; F is a cranked axle on which E is fixed; G' are "spade handles" on the upper ends of the piston rods, G; H are short feed cylinders secured in the bottom of the seed box, B; I represents the lower pistons, and J set screws by which they may be secured at a higher or lower position on the piston rods, G; K represents the upper pistons which are merely disks of leather or rubber, and L the discharge trough through which and the flexible spout, M, the seed is allowed to descend at each revolution of the shaft, F; N N are digging spouts which serve the double purpose of excavating the drills or channels, and providing a passage for the seed to the bottom thereof. In other points the machine is fitted up like other of the most approved machines for this purpose, and every provision is made against derangement, and for combining great strength and durability with lightness and ease of working.

Fig. 2

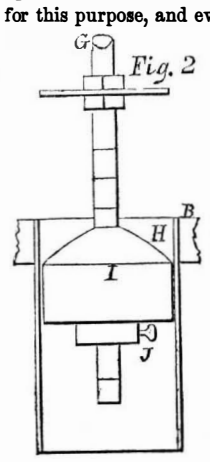
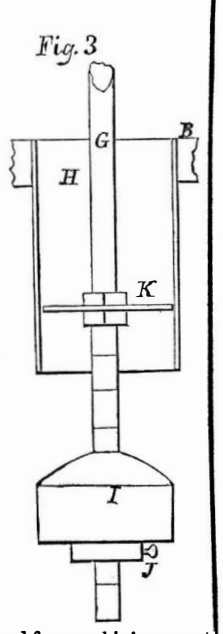


Fig. 3



This machine was patented on the 3d of March last. For further information address either L. B. Meyers or H. A. Meyers, Massillon, Ohio.

Something New in the Iron Trade.

The Liverpool *Courier* announces that John Harding, the managing partner in the Beeston Manor Iron Works, Leeds, has taken out a patent for an improved method of freeing iron and other metalic ores from the rock and shale in which they are generally imbedded. As those who are familiar with the iron trade are aware, it is necessary to remove this extraneous rubbish before the ore is sent to the blast furnace, and hitherto the mode of accomplishing this has been by exposure to the air, by which the rock and shale was loosened, after which it was chipped or "napped" off by manual labor. This was a work of time and involved considerable cost, and the object of Mr. Harding's patent is to diminish both the one and the other. Instead of exposing the stone to the air, it is enclosed in a structure for the purpose, and subjected to the action of steam, which effects in a few hours that which often, under the ordinary method, takes months or years to accomplish, the shale and rock falling off of themselves, and rendering almost unnecessary manual labor for "napping." The invention has been seen by some of the leading men connected with the iron trade in the district, who are satisfied of its value and efficiency; and it may yet be very extensively operated.

Literary Notices.

SCIENCE OF COMMON THINGS—A familiar explanation of the first principles of physical science, for young students. By David A Wells, A. M.; Ivison & Phinney, New York, 1857, 12 mo., 324 pp. A great objection to works of this kind is that they are necessarily too concise to convey scientific knowledge. Brief generalizations of truth are frequently most prolific fountains of error in the natural sciences. Having said this we are free to add that after careful examination we unhesitatingly pronounce this the best book in its line which has ever yet appeared. It is almost invariably clear and correct, and interlards the exposition of principles with many valuable facts relating to each of the subjects treated on.

THE ECLECTIC MAGAZINE, for August, contains a fine engraving and likeness of Agassiz, the most eminent naturalist now living, accompanied with a brief biography. It has also an able article from the *Westminster Review* on "Progress: its Law and Cause," besides others of solid interest. We are happy to learn from the editor that the *Eclectic* is in a prosperous state. It well deserves success, as it is a sterling magazine, and should have a circulation equal to its character and value. W. H. Bidwell, Publisher, No. 5 Beekman street.

A MANUAL OF ASTRONOMY AND THE USE OF THE GLOBES. By Henry Kidder, A. M, Ivison & Phinney, New York, 1857; 12mo., 171 pp. This is a school-book on a science which is very sublime and ennobling, but is practically useless to those for whom this book is intended. The first four pages are ordinary valuable definitions of geometrical terms—the remainder is dry, and far inferior either in correctness or attractive character to many other astronomical books.

NEW Prospectus

OF THE

SCIENTIFIC AMERICAN.

VOLUME THIRTEEN.

To Mechanics, Manufacturers, Inventors, and Farmers.

In announcing the Thirteenth Annual Volume of the SCIENTIFIC AMERICAN, which commences on the 12th of September, the Editors and Publishers embrace this opportunity to thank their numerous friends and subscribers for the encouraging and very liberal support heretofore extended to their journal, and they would again re-assure their patrons of the determination to render the SCIENTIFIC AMERICAN more and more useful, and more and more worthy of their continued confidence and good will. The undersigned point to the past as a guarantee of their disposition to always deal justly and discriminatingly with all subjects of a Scientific and Mechanical character which come within their legitimate purview.

Having entirely discarded the system of employing itinerant agents to obtain subscribers, the Publishers of the SCIENTIFIC AMERICAN propose to offer

ONE THOUSAND FIVE HUNDRED DOLLARS IN CASH PREMIUMS

for the fifteen largest lists of subscribers sent in by the 1st of January, 1858; said premiums to be distributed as follows:—

For the largest List	$300
For the 2nd largest List	250
For the 3rd largest List	200
For the 4th largest List	150
For the 5th largest List	100
For the 6th largest List	90
For the 7th largest List	80
For the 8th largest List	70
For the 9th largest List	60
For the 10th largest List	50
For the 11th largest List	40
For the 12th largest List	35
For the 13th largest List	30
For the 14th largest List	25
For the 15th largest List	20

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